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SEPTEMBER 1951

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CHEMICAL PROCESSING

The News Magazine of Processing Developments and Control

Highlights

of this issue's
299 articles

*Describing developments in
processes, techniques, materials,
equipment*

The Cover Picture

Offensive tank car washings are divided by this flume and begin treatment as they enter two settling basins. Water leaves process practically colorless and with little or no odor Page 8

PUTMAN PUBLISHING CO., CHICAGO

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terse, vital editorial; 'hand-picked' circulation;
high-visibility, square format; quality reader-
ship; hence READER ACTION

Vibrating Screen Atop Tank Removes Fines from 4 Tons of Catalyst Beads per Hour . . . 10

Pigment Wetting and Dispersion Make Paint, Ink, Putty Formulation Easy 24

For Pyridine Compounds, Good Starting Material is 2-Aminopyridine 38

Projection Screen of Metallograph Eases Extended Examinations for Dirt Counts or Grain Size Determinations . 66

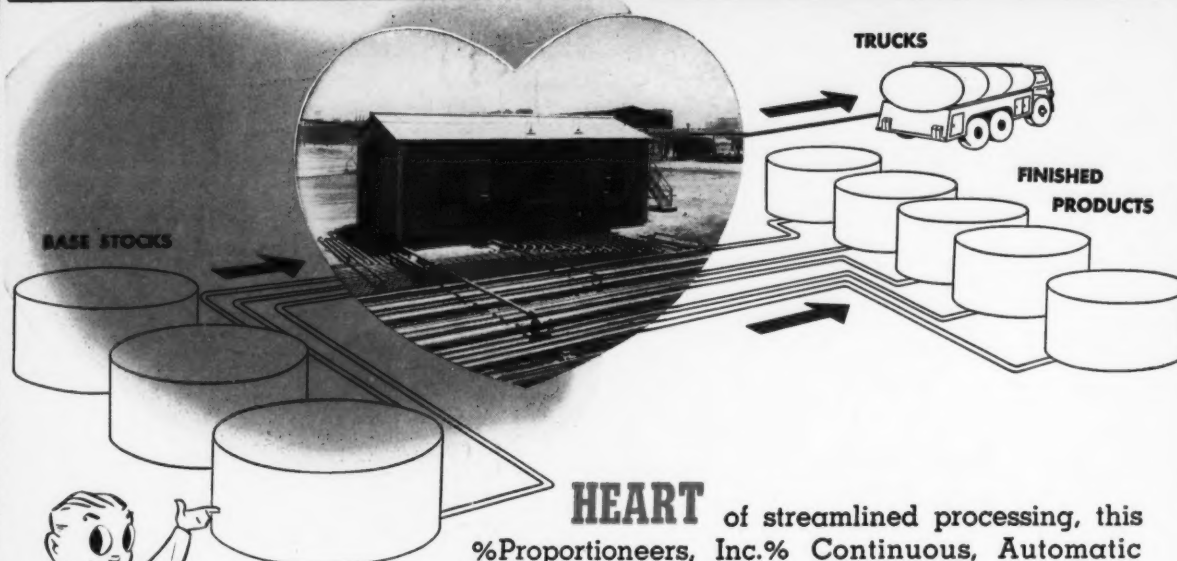
Size of Control Panels Cut 2/3 by Midget Instruments . . . 83

One Cu Ft of Braced Aluminum Heat Exchanger Holds Up To 450 Sq Ft of Total Surface . 118



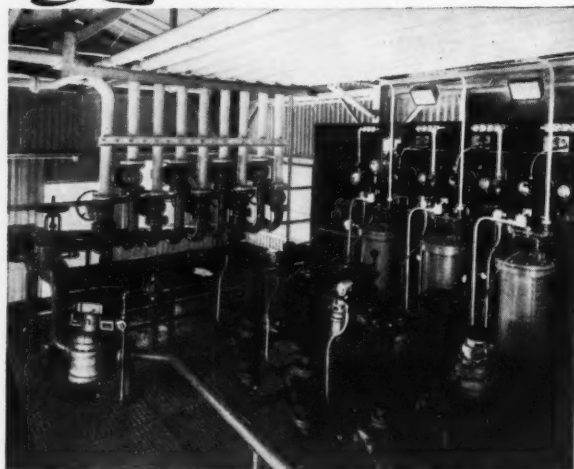
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"That's Interesting"

The Taft-Barkley bill

Almost all of the 48 states have enacted regulatory laws for the control of pollution. The Taft-Barkley bill, known as the "Anti-pollution Bill No. 845" was the climax of many years study and congressional activity.

It has been estimated that over one hundred million dollars is lost annually due to pollution. Cost of water treatment solely due to pollution, is placed at 50 million dollars per year.

First step in industrial waste treatment is reduction in volume of waste to a minimum. Industrial processes require vast amounts of water. Packing houses require 2,000 gallons of water per animal processed; steel mills 65,000 gallons per ton of steel; paper mills 40,000 gallons per ton. (Summarized from "Four Ways to Economize on Industrial Wastes," Gilbert Associates, Reading, Pa.)

Luminous telephone dial

Luminous letters and numbers make a plastic dial for telephones easily visible in the dark. Dial is made in two plastic halves which quickly lock in place between the dial rotary and the dial face of any standard dial telephone. (Glo-Dile Co., 216 North Cordova St., Burbank, Calif.)

Acetylene gas process

Exclusive North American rights to use the Badische Anilin & Soda-Fabrik process in designing and constructing plants for producing acetylene from natural gas has been acquired by The Chemical Construction Corporation of New York. This organization is a unit of the American Cyanamid Company.

This process has been fully proved in commercial use. It offers a major economic advantage to domestic users of this multi-purpose gas since it produces acetylene of high purity at very low cost.

The basic steps of this process are simple. First, natural gas hydrocarbons are partially dehydrogenated to a crude acetylene of any desired purity. The "heart" of the process is the use of a selective solvent specially developed for this purpose. New applications are constantly being added to such established ones as use in synthetic rubber production and making vinyl plastics.

Translucent plastic mitts

Translucent plastic mitts are made from 12 gauge vinylite plastic and require no drying or powdering. High flexibility allows ample finger and hand movement. Several sizes are available. One 13" long provides hand and wrist protection. Another size is 23" long. Mitts resist acids, detergents and solvents. (Cenco News Chats — Central Scientific Co., Chicago, Ill.)

For more information on product at left, specify CP 6324 . . . see information request blank between pages 2-3.

"That's Interesting"

Clouds don't have a chance now — seeding works both ways

A technique called "overseeding" and which utilizes sodium chloride may prove an effective tool in controlling rainfall. Unlike such seeding materials as silver iodide and dry ice, the rock salt would be used in clouds above freezing temperature. It is indicated that certain salts attract molecules of water vapor present in clouds and "grow" raindrops which are heavy enough to fall.

In preventing or delaying rain, "overseeding", or adding a great quantity of sodium chloride, makes less moisture available for each



"Remember the good old days when you only rained if you wanted to?"

salt particle. This stunts the growth of potential raindrops so that they do not become heavy enough to fall.

It is suggested that rock salt could be dispensed from the ground into the air by coke-burning generators. These would vaporize the salt, then project it at high velocity. This would cause the salt to cool quickly in the form of fine solid particles. (Summarized from address by Dr. Vincent J. Schaefer, weather scientist, General Electric Co., Schenectady, N. Y.)

Trolley didn't clang, brake didn't bump, but fenders went phfft — !

The streamline trolley didn't go "clang, clang, clang," and the brake didn't go "bump, bump, bump." It was the steel fenders that were going — going to wrack and ruin because of exposure to rain all year round and in the winter to snow, slush and de-icing chemicals sprayed on the streets.

This was the problem that faced transit officials in a mid-west city. Fenders had to be replaced every three months.

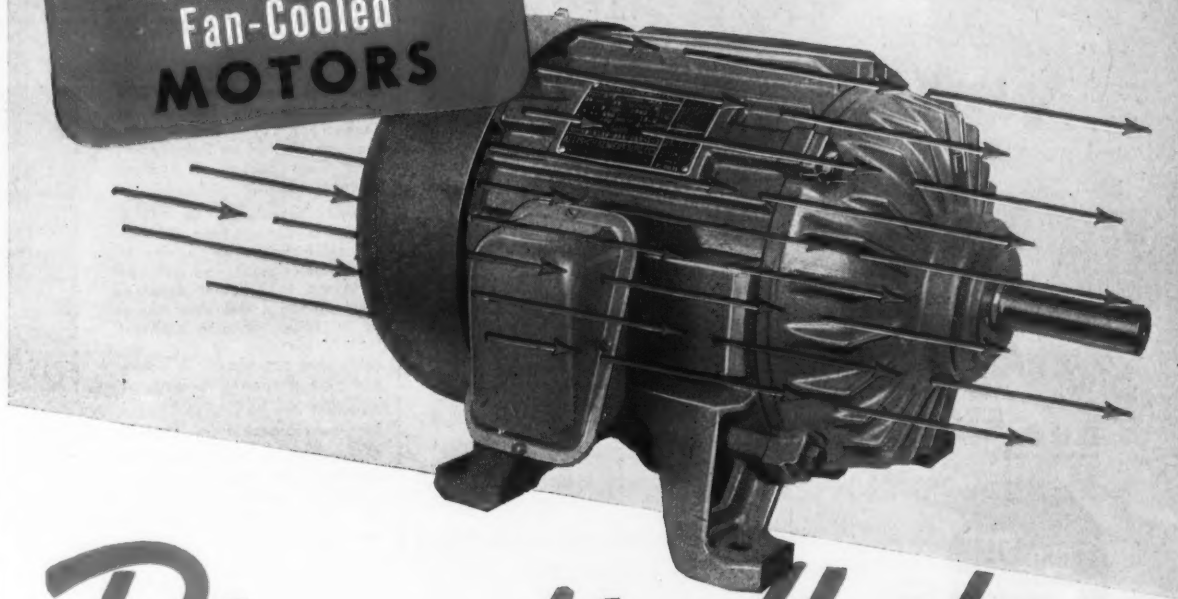
A solution was found to be a rubber fender. Based on idea submitted by traction company, a manufacturer produced a fender made of Neoprene rubber with ribs molded into under surface for rigidity. Since installation on 190 trolleys, none has required replacement after a year of service, except that necessitated by mechanical damage. Savings in maintenance are \$10,000 a year. Neoprene fenders are now standard on all new trolleys ordered by this transit company. (Summarized from April 1951 issue of the Neoprene Notebook published by Rubber Chemicals Division of E. I. du Pont de Nemours and Company, Inc., Wilmington, Delaware.)

Shipments of radioisotopes now number 9,000

At this date, some 9,000 shipments of radioisotopes have been delivered to hospitals, laboratories, and industrial plants, but only 3½% are in the latter classification. However, their use industrially is increasing as fast as people can be trained to handle them safely and effectively.

(Continued on third cover)

ALLIS-CHALMERS
Totally-Enclosed
Fan-Cooled
MOTORS



Blows itself clean as a Whistle!

DIRT IS CARRIED AWAY by cooling air blown over the ribbed cast iron frame and bearing housings of this new Allis-Chalmers tefc motor. That means less motor cleaning . . . inspection . . . overhaul!

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Studies show that on most applications, totally-enclosed fan-cooled motors more than pay back their extra cost in reduced maintenance. And this new Allis-Chalmers Type APZ tefc motor makes maintenance costs lower than ever before.

Rigid Construction

The frame is cast iron which has high resistance against corrosion and distortion. Bearings are pre-lubricated at the factory and should need no attention for years. Tapped holes with pipe plugs to permit regreasing and to provide grease relief are standard equipment.

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The new Allis-Chalmers Type APZ totally-enclosed fan-cooled motor is built in all NEMA standard frame sizes from 224* to 505. Also in explosion-proof type. Your A-C Authorized Distributor or District Office has complete information. Call today, or write Allis-Chalmers, Milwaukee 1, Wisconsin. Ask for Bulletin 51B7225.

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The Human Element in Research and Product Development

By DR. RAY P. DINSMORE
Vice President in Charge of
Research and Development,
Goodyear Tire & Rubber Company

Chemical engineering graduate of Massachusetts Institute of Technology, 1914. Honorary degree of Doctor of Engineering from Case School of Applied Science, 1940.

Joined Goodyear in 1914. Served in Canada from 1916-17, was chief chemist at opening of Los Angeles plant, and returned to Akron as assistant development manager and chief chemist in 1921. Became assistant factory manager in 1932, development manager in 1939, and vice president in 1943.

Assistant deputy rubber director for Government from 1942-43.

Membership in American Chemical Society, American Institute of Chemical Engineers, American Institute of Chemists, American Association for Advancement of Science, and Institution of the Rubber Industry (British). Author of numerous technical and engineering papers.



THE FOLLOWING is an abstract of a talk delivered before the American Institute of Chemists in Niagara Falls, Ontario, Canada, on May 10, 1951.

As technical people, we are prone to ascribe to our technical results a completeness and finality to which they are not entitled. Such results are valueless until they enable the achievement of some useful human purpose. Utilization of pertinent human factors is as important to the accomplishment of this objective as is the construction of a correct scientific foundation.

A successful business organization has adopted certain principles and attitudes and has fostered certain skills which, though unrecorded, unexpressed and in the background, strongly influence the effective cooperation of its personnel so necessary for the company's success.

Properly developed, these intangible human factors result in a common conviction of sound principles of conduct, an enthusiasm for the objectives pursued, a confidence in the adequacy of the leadership, and an esprit de corps which involves, among other things, a belief shared by all members of the organization in the ability and cooperative interest of the rest.

The human element is very important in the process of placing new research developments into successful commercial operation. It may be just as important as the tangible factors such as adequate research preparation, adequate piloting, market survey, market testing, patent survey, and adequate organization directed toward synchronized sales service, research and product improvement. I do not intend to slight these tangible factors in what I have to say. I believe they are generally known and accepted, whereas the more intangible human factors are not as fully appreciated.

A good research planner will not only consider that he must have a good project, the success of which would offer financial benefits to his company . . . he also must take steps to determine whether the conditions will be such as to foster its advancement and whether it will

(Continued on page 64)

Edward Valves

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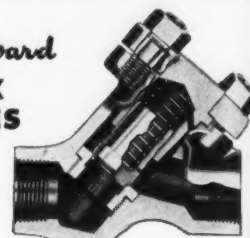


Fig. 2672-78 Series . . . Edward forged steel check valves are built in both ball and piston disk types in 600 or 1500 lb sp series at 850 F and may be used in either horizontal or vertical lines. Exclusive Edward design guide lip and spring loading insure quick positive seating. Design details include union or bolted bonnet construction, screwed, socket welding or flanged ends and 13% chromium stainless steel seats and disks. Built in sizes 1/4 in. to 2 in. inclusive.

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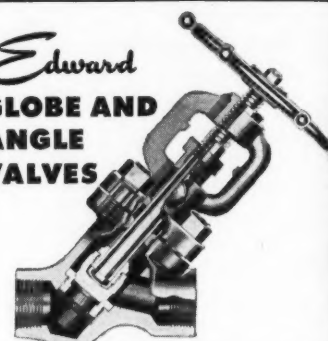


Fig. 444-48 Series . . . Edward forged steel globe and angle valves are available in stop, needle or stop-check types. They are ideal for almost any service where small forged steel valves are used for positive closure of flow. Their design, with stem at 60° to line of flow, allows approximate straight-through flow and consequent savings because of low pressure drop and minimum turbulence. Built in 600 and 1500 lb sp series at 850 F and in sizes 1/4 in. to 2 in. inclusive. Details include union or bolted bonnet construction, screwed or socket welding ends and 13% chromium stainless steel seat and disk.



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Edward Valves

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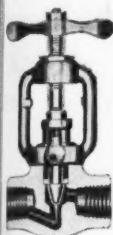
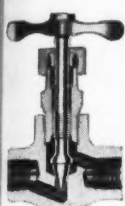
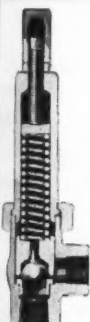


Fig. 952-3 Series... Ratings of 6000 lb WOG or 1500 lb sp at 1000 F—carbon steel or 13% chromium stainless steel bodies in sizes 1/4 in. through 1 in.—drop forged body & bonnet—screwed or socket welding ends—swing bolted gland and tapered needle point 13% chromium stainless steel stem-disk—no bonnet joint—globe and angle designs.



Edward GAGE VALVES

Fig. 152-3 Series... Ratings of 4000 lb WOG at 150 F or 600 lb sp at 750 F—carbon steel, 13% chromium stainless steel or 18-8 stainless steel bodies—13% chromium stainless steel semi-needle stem-disk—sizes 1/4, 1/2, 3/4 in. have safety taper threaded bonnet joint—3/4 and 1 in. sizes have union bonnet—globe and angle designs.



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Fig. 141 Series... Rating of 600 lb sp at 850 F in sizes 1/4 in. to 2 in., inclusive—Stainless steel seat and ball disk—fool-proof functional design and accurate spring action assure positive relieving action—alloy steel springs available for temperatures over 400 F—globe and angle designs.



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CHEMICAL PROCESSING

(CHEMICAL PROCESSING PREVIEW)

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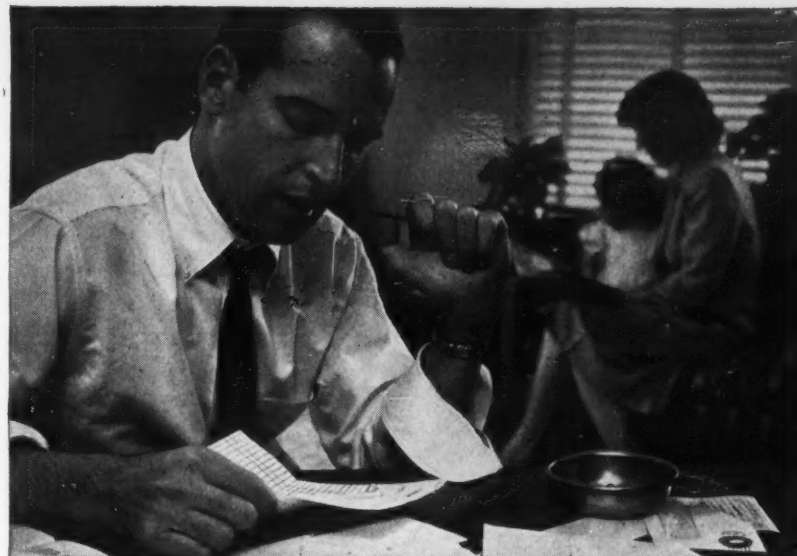
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STRUGGLING ON \$100 A WEEK...

Let's be realistic about this question of income. Many of us grew up with the idea that \$100 a week was a pretty good salary. Nothing sensational, perhaps, but a goal to shoot at—a sort of milestone indicating progress, promising success. To the frugal family, it meant a comfortable home, some luxuries, a bank account.

But that is no longer true. Today \$5,000 a year yields the necessities, but leaves no substantial margin for savings. Consider: Since 1939 the cost of food and clothing—in fact, the over-all cost of living—has risen tremendously.

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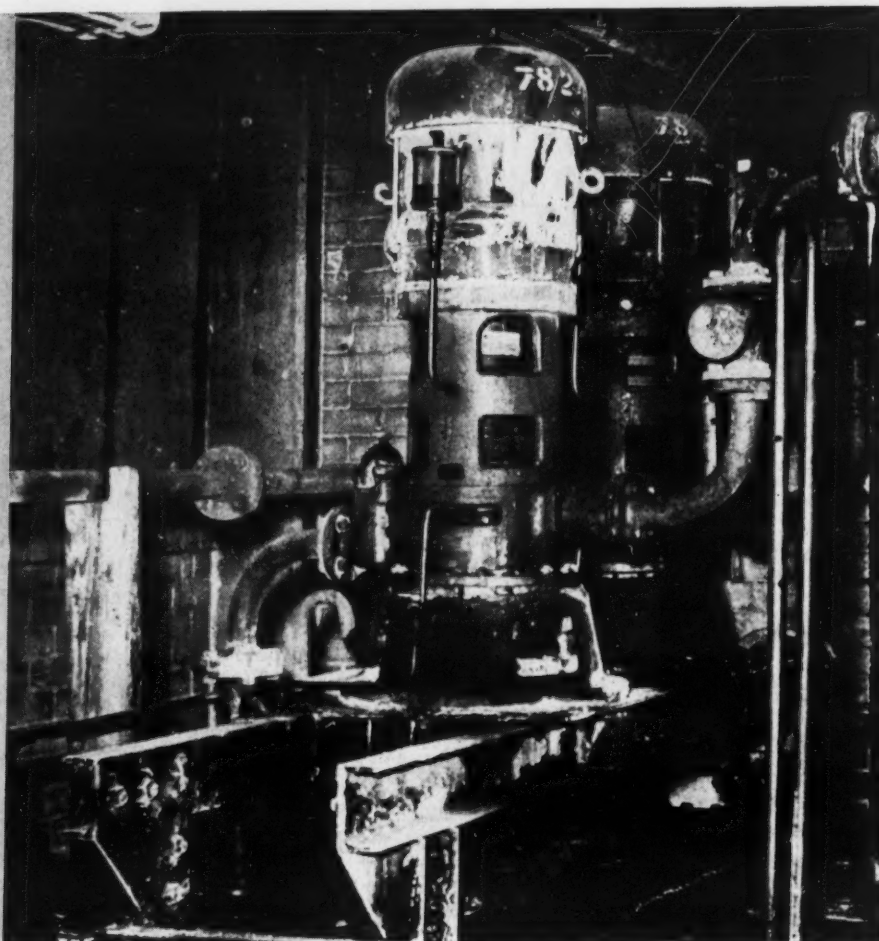
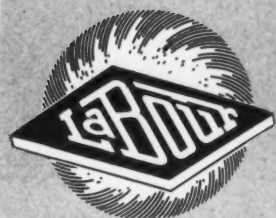
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HIGHLIGHTS

(Continued from front cover)

- Treatment for Tank Car Wastes Replaces Lagooning to Keep in Step with Anticipated Pollution Laws 1
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- Plastic Record Preforms Made by Compressing Dry Ingredients Into Discs in Press 1
- Polyvinyl Resin Processes Without Plasticizer on Conventional Plastics Equipment 2
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- Paper Containing Holes, Windows Can be Coated with Polyethylene in New Process 4
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- Makes It Easier to Load, Unload Reefer Cars With Pallets 8
- Fills 200 Pound Bag to Plus or Minus 1/10 Pound 9
- Conveyor Chain Flexes Both Horizontally and Vertically 9
- Cleans and Dries Belt Conveyor, Dropping Material Into Discharge Chute 10
- 175 to 350 Pounds of Water Produced for Each Pound of Fuel Consumed 12
- Use of Hydraulic Principle in Remote Control System Eliminates Backlash 14
- Supplies Large Quantities Hi-pressure Dry Steam in Short Period 14
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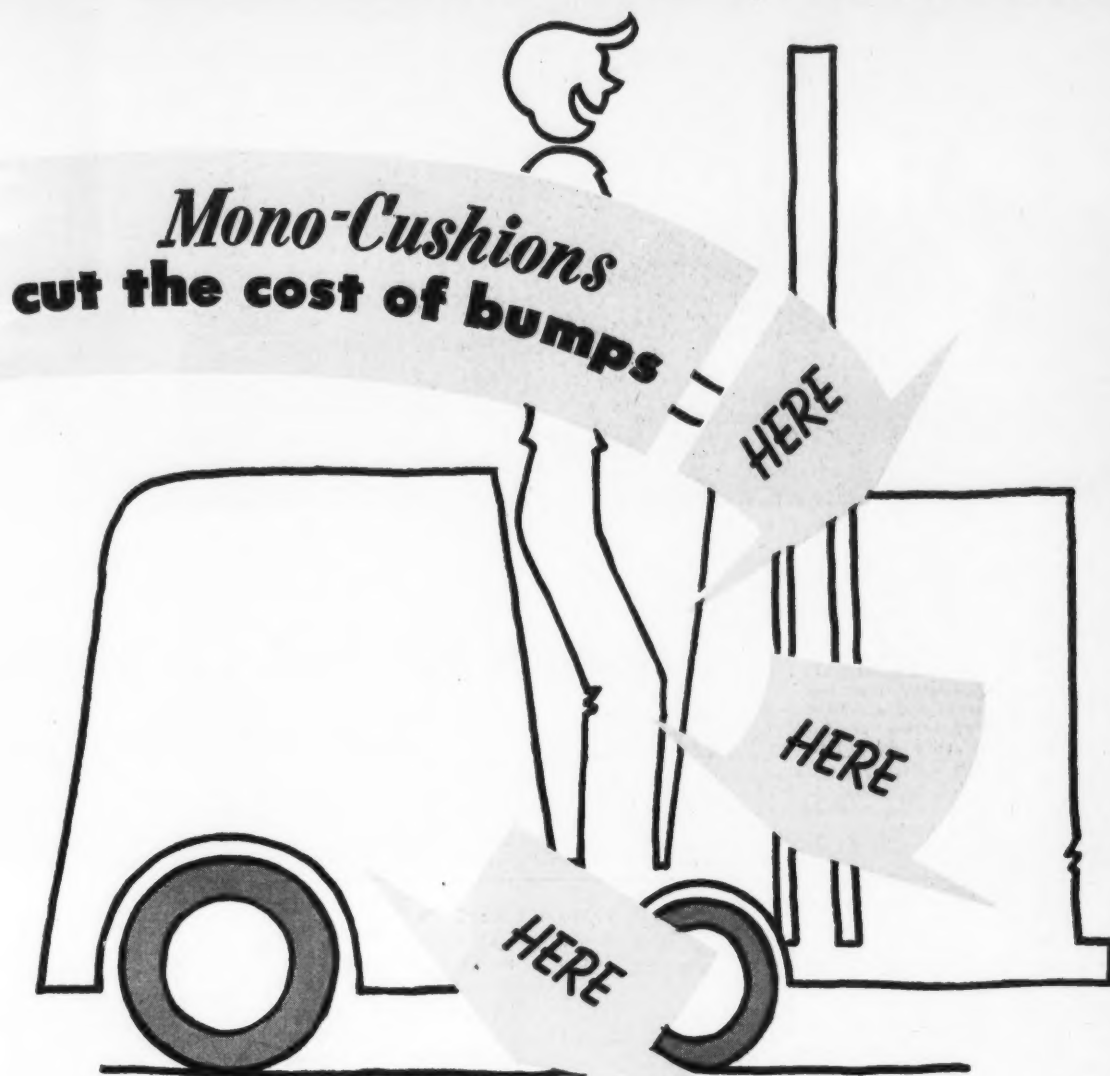
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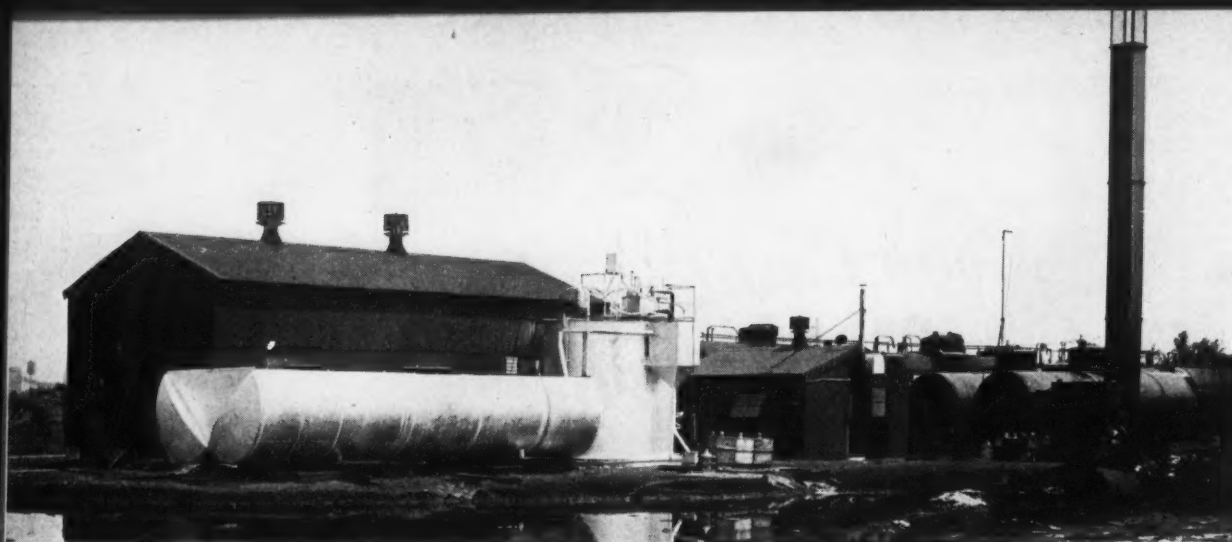


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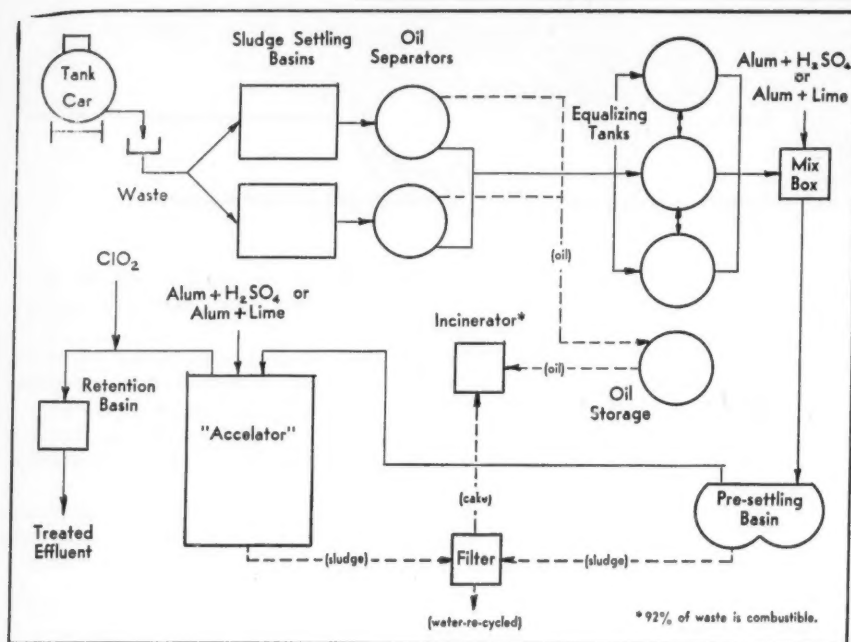
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Lagooning became impractical in recent years due to increasing volumes of wastes — now, treatment of wastes results in water effluent that is practically colorless and odorless

View of General American Transportation Corporation's new plant at East Chicago, Indiana, for treating tank car wastes. Seen from left to right are control house with pre-settling basin in foreground, Accelerator, oil separator house, storage and equalizing tanks, and incinerator for disposing of oil and sludge. Flow diagram is below

Treatment for Tank Car Wastes Replaces Lagooning to Keep in Step with Anticipated Pollution Laws



PROBLEM: East Chicago, Indiana, is the home of one of 30 coast-to-coast repair and maintenance shops that the General American Transportation Corporation maintains for its tank cars used by industry for transporting some 700 different liquid products. Before repairs can be made, cars must be washed and steamed out.

It had been a practice at East Chicago to discharge these washings to a lagoon; however, increase in the number of

cumstances and legal restrictions, and the Corporation's Sagertown, Pa., plant where it is necessary to provide complete treatment including phenol adsorption and biological oxidation. Principle at the East Chicago plant is chemical precipitation and double clarification followed by treatment with ClO_2 .

The plant had to be built in a rather small area — a triangular piece of land bounded by the old lagoon and

cars (now as high as 20/day) handled in recent years made this practice impractical due to the large volume of waste waters produced. Although overflow from the lagoon could, after mechanical oil separation, be discharged into Lake Michigan without violating present pollution laws, it was foreseen that this practice would not be advisable in view of the increasing tempo of pollution legislation.

Solution: On July 1, a new waste treatment plant was started up at East Chicago to take care of the tank car wastes from the washing and steaming operations. The plant is a "compromise" between GATC's West Colton, Calif., waste treatment plant where process could be simplified by reason of local cir-

converging railroad tracks. Hence, it is necessarily quite compact. In order to keep original cost as low as possible old car tanks were converted to serve as storage and pre settling vessels.

The process

Waste is collected in concrete ditches along tracks where cars are cleaned, and flows into two small concrete settling basins and thence to two small Gale oil separators. Actually, the separators are connected in parallel so that while one is being cleaned the other is running. Free oil (overflow) goes to a 10,000 gal oil storage tank converted from tank car, from which it is withdrawn and used to burn sludge in an incinerator.

De-oiled material (underflow) goes into a sump from which it is pumped to three 10,000 gal tanks (converted from tank cars) for equalizing. This equalizing is important because of the wide difference in the wastes being treated, a factor to be considered in tank car cleaning stations. The three tanks are interconnected so that thermal differences bring about good mixing (equalizing) by causing a constant movement of liquid between the tanks. These tanks and the oil storage tank are equipped with level indicators, read on the main panel board, and high-level alarm systems.

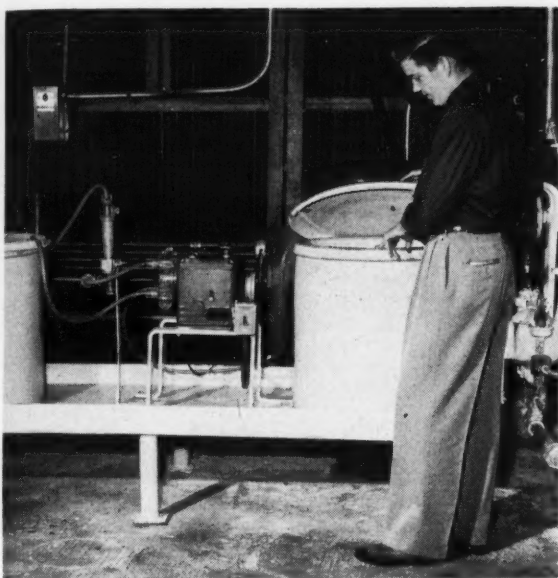
From the equalizing tanks, the waste is pumped to a mix box where alum is fed at a fixed rate, while sulfuric acid or lime is added through automatic control valves, according to the pH value of the waste. The formed aluminum hydroxide floc entraps suspensoids and destroys oil emulsions.

The liquor then flows to a novel pre-settling tank. This was made by cutting a tank car tank in half longitudinally.

and rewelding it with triangular sheets on each end so it has the shape indicated in the diagram. The pH is about 6.5 here. Precipitated sludge is withdrawn periodically from the bottom of each section of the tank through timed-cycle valves. It is then filtered on a Conkey sludge filter; cake is burned and water recycled.

Overflow is pumped to an Infilco Accelerator where more alum and sulfuric acid or alum and lime are added. Sludge from this piece of equipment is removed periodically through timed-cycle valves and is filtered along with the sludge from the pre-settling tank. Here too, the cake is burned and the water recycled.

Overflow from the Accelerator is treated with ClO_2 which is injected directly into pipe line to destroy phenol and similar compounds. This completes the treatment. Alum solution is made up in small wooden vats in the control building, and is metered out by a Milton Roy step-valve type pump. Lime is mixed in an Infilco lime feeder and



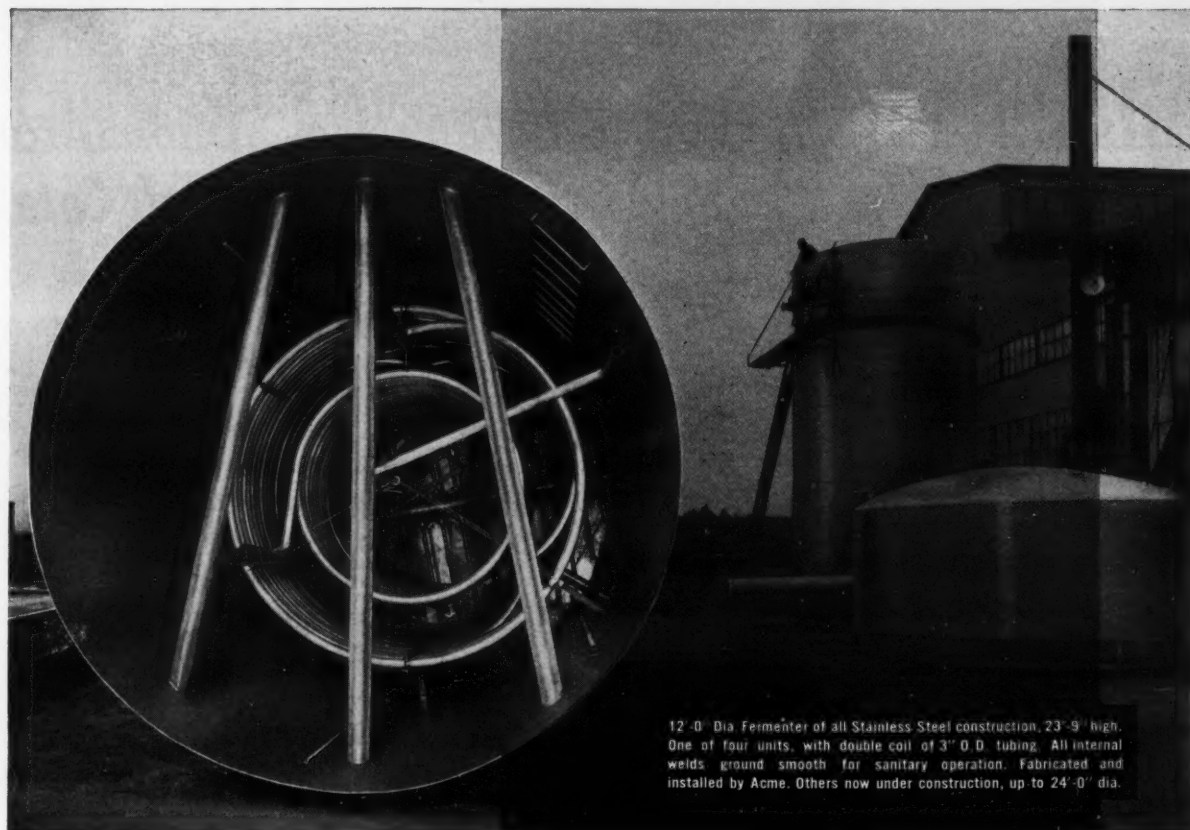
Engineer inspecting chlorine dioxide generator and injector located in control house

is pumped into the process by a variable-stroke piston pump. Sulfuric acid is pumped from an underground tank with a centrifugal pump having a specially designed self-primer. The amount of lime or sulfuric acid fed is automatically controlled by means of the output of pH electrodes through a single Brown instrument. ClO_2 is made in the control house. A slurry of sodium chlorite and sodium hypochlorite is made up in one crock, and hydrochloric acid solution in another. A "Proportioners" double proportioning pump brings the two solutions together in a Lucite cylinder from which the ClO_2 passes to the point of injection.

Most of the process is automatic and is operated from the panel board. The board contains a pH indicator and control, level indicators, valve timer and a process timer. The process timer is set to provide a suitable lag between the time the impeller in the Accelerator is started and the time the pumps and valve timer begin to operate. This assures a suitable floc condition in the Accelerator before addition of clarified overflow from the pre-settler.

Results: Effluent is practically colorless and has little or no odor. Although it is entirely satisfactory for discharge into Lake Michigan, plans may be made to send

(Continued on page 13)



12'-0" Dia Fermenter of all Stainless Steel construction, 23'-9" high. One of four units, with double coil of 3" O.D. tubing. All internal welds ground smooth for sanitary operation. Fabricated and installed by Acme. Others now under construction, up to 24'-0" dia.

ANOTHER *Stainless Steel* INSTALLATION BY ACME

These Fermenters fabricated by Acme in Stainless Steel are just another link in the chain of Acme process plant equipment that circles the globe. Acme engineers and craftsmen have demonstrated time and again their ingenuity and versatility working with Stainless Steel, Stainless Steel Clad, Steel, Lead, Copper, Monel, Inconel, Nickel and virtually every other type of ferrous and non-ferrous metal and alloy. Acme installations have many times won the commendations of their design in improved yields of high quality products. Regardless of what your process problem may be—a single piece of equipment or an entire plant—Acme experience and facilities are at your service.



When inquiring check CP 6331 on handy form, pgs. 2-3



**YOUR
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of
superior
insulations!**

When you specify insulation, be sure that it carries this seal! Authorized by the Industrial Mineral Wool Institute, the certification label assures you that the product has passed stringent laboratory tests and meets requirements prescribed by the National Bureau of Standards.

Specify Baldwin-Hill insulation materials...Your guarantee of certified quality and reliability.

**Insulating Cement
Rockwool Pipe Insulation
Rockwool Blankets**

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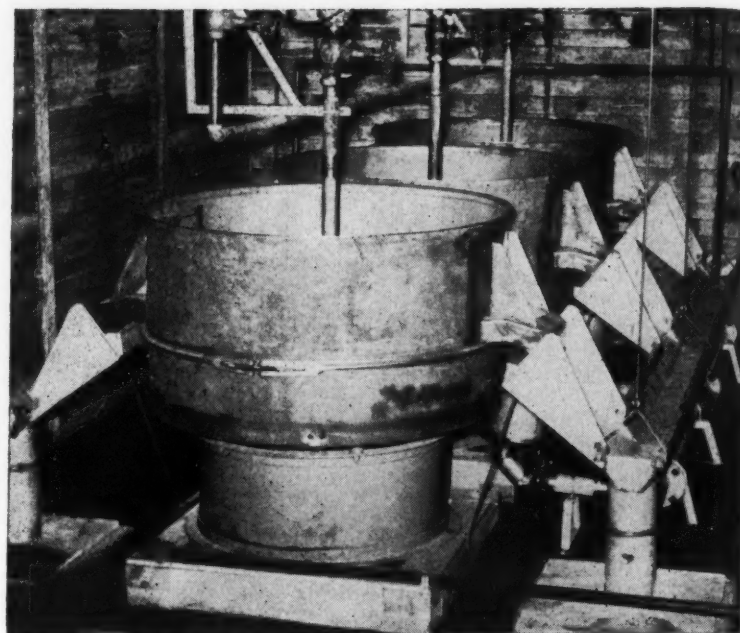
When inquiring check CP 6332 on handy form, pgs. 2-3

Page 10

**New Solutions
OF PROCESSING PROBLEMS**

Vibrating Screen Atop Tank Removes Fines from 4 Tons of Catalyst Beads per Hour

Controlled horizontal, vertical vibrations cause particles to move in spiral path on circular screen for maximum efficiency, capacity



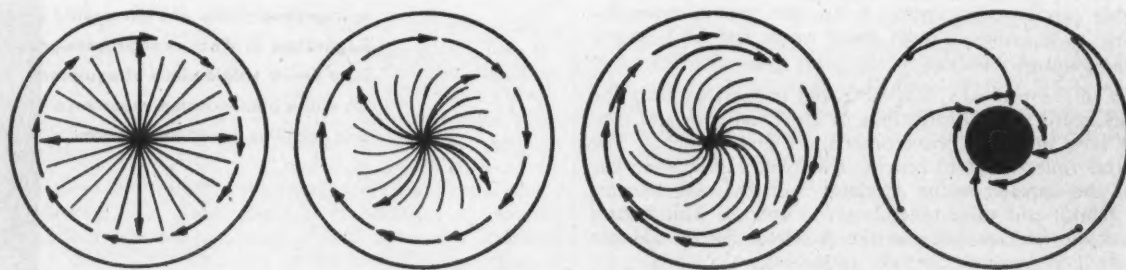
Typical installation of separators is shown in photograph above

PROBLEM: In the manufacture of bead catalyst at Socony-Vacuum Oil Company, Paulsboro, N. J., approximately 5% of the product being made was split into small beads and dust. As these were of no value, it was desired to remove them as soon as possible from the circuit so as to increase capacity of the heat treating operation and reduce an annoying dust condition. The only place in the circuit where these particles could be removed was between the first and second heat treatment tanks. The area to accommodate a screen was very limited and, as it was on top of a high tank, a considerable amount of money would have to be spent in construction of supports necessary for most types of screens.

Solution: One Model B-1D 48" SWECO vibrating Separator, using an 8 x .750" mesh screen, was set in between elevator discharge and opening of second tank. (Elevator carries material from first tank to second.) Separator provides a controlled pattern of flow of

material over screen. Feed to separator is about 4 tons/hr.

Vibration, both horizontal and vertical, is effected by a spring-supported motor set in a vertical plane with two eccentric weights, one at the top of the shaft and one at the bottom. Center of gravity of the top weight theoretically coincides with the drive mechanism so that, as rotation takes place, the unbalanced centrifugal force resulting from the weight being eccentric causes the entire mechanism to vibrate in the horizontal plane. The lower weight acts to tilt the machine or cause a



0° LEAD
Average material will be thrown straight and may give insufficient separation

15° LEAD
Average material will begin to spiral

35° LEAD
Average material will give maximum efficient screening pattern

EXCESSIVE LEAD
Oversize material does not discharge

CHEMICAL PROCESSING

vertical vibration when it is set so that it leads the upper weight in the direction of travel. Because the screen is connected to the cover plate of the motor at its center and perimeter, the above motions are transmitted to it and act upon the particles being screened.

Maximum efficiency of separation is determined by the horizontal and vertical movements imparted to the screen. The horizontal pattern shown by particle movements (see drawings) is regulated by the degree by which the adjustable bottom weight leads the top motor weight. Pattern desired will vary with the characteristics of the material and bottom motor weight setting.

Vertical material travel will vary with material characteristics and mass and shape of the two weights. For a heavy or coarse material, extreme vertical motion is produced by bolting four weight plates to the bottom of the bottom motor weight. Low density or very fine materials may require a light vertical action provided by using fewer weight plates.

Each screen is held uniformly taut in all directions and is supported at its center by an adjustable spring-tensioned mounting. Therefore, the screening surface vibrates freely without whipping against rigid supports; thus screen cloth wear is greatly reduced. When the separator is placed on any firm, level flooring, no vibration is transmitted to its supporting base or the floor.

Screening surface is slightly concave so that, as material moves in a spiral path, it is always traveling uphill, thereby insuring tumbling of the particles with maximum opportunity to contact screen openings.

Although this installation is using single screens, units are available with as many as four. In such cases, the undersize from each screen is returned by a cone to the center of the next lower screen and the tumbling spiral travel is repeated. Entire area of each screen is thus utilized for screening. Multiple screens of different openings permit separate recovery of different fractions, each accurate in size range.

Discharge spouts which project from spacer frames holding screens can be turned by turning the frames. Screens can be replaced in 45 minutes when necessary.

Because entire load is spring-supported, power requirements are held to a minimum; a 1-hp motor is adequate for 48" diam screens.

Results: Separator was fitted relatively easily into the limited space atop tank. No special, costly support was required because the machine has practically no vibration in the base and weighs only 750 lb.

Source: SWECO Separators are products of South-Western Engineering Company, Dept. CP, 4800 Santa Fe Avenue, Los Angeles 58, Calif. . . . or for more information check CP 6333 on handy form, pages 2 and 3.

Features plastics investigations; covers many other topics

Results of investigations carried on by the Princeton University Plastics Laboratory are reported under four categories: mechanical, electrical, new or improved material, and high polymer. Each category is extensively referenced.

Other items cover determination of impurities in inert gases, development of microwave amplifier tubes, synthetic liquid fuels, surface drainage, investigation of road foundation failures, and aircraft material specification. In all, 233 reports are listed. To obtain the May, 1951 issue of "Bibliography of Technical Reports," remit 50c direct to Office of Technical Services, US Dept. of Commerce, Washington 25, D. C. (Make check or money order payable to Treasurer of the United States.)

SEPTEMBER, 1951

No ONE chain serves every purpose

LINK-BELT offers the right chain

... engineered for
your requirements

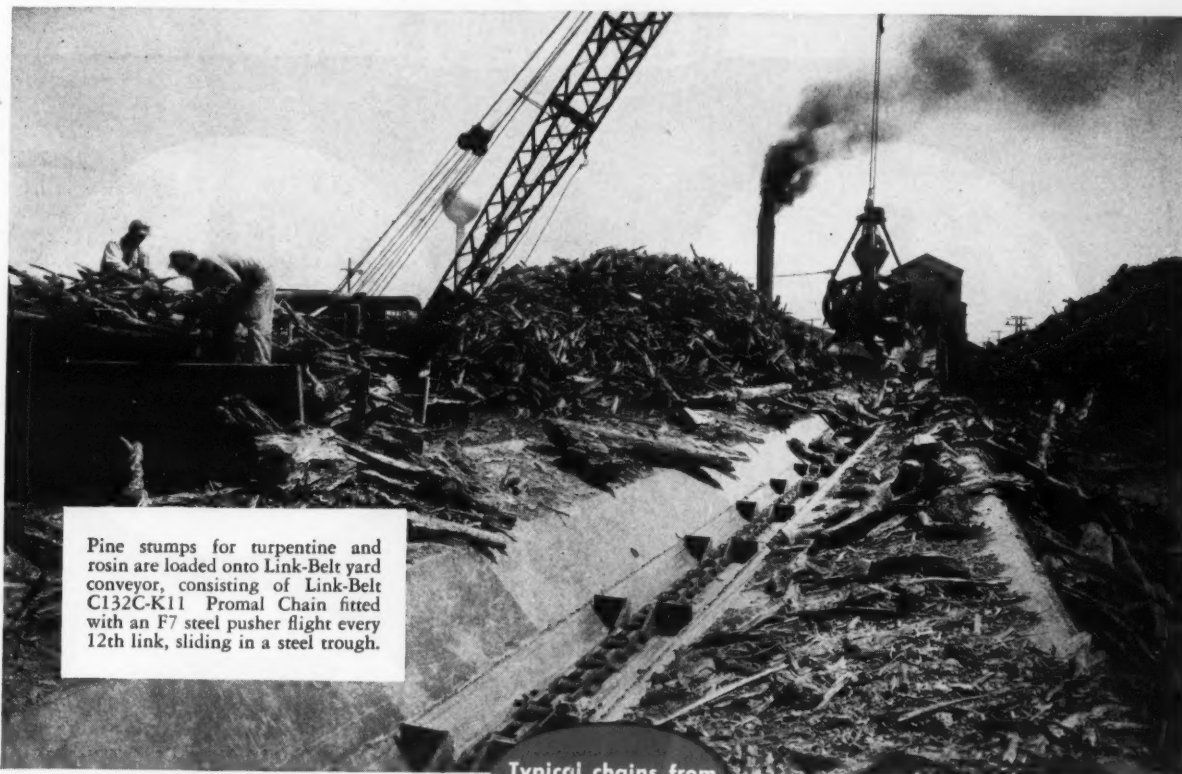
Don't settle for a "cure-all" chain to handle every job. Different types of chain have different characteristics. That's why Link-Belt makes the most complete line of chains in the world. Our engineers can recommend the exact type of chain to fit your particular needs . . . the one that does your job best.

Equally important is your assurance that *any* chain with the Link-Belt name will give you longer chain life. Exact control of raw materials and processes . . . plus manufacturing refinements add up to the highest standards.

LINK-BELT COMPANY: Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8, Springs (South Africa). Offices, factory branch stores and distributors in principal cities.

12,328-C

LINK-BELT
CHAINS AND SPROCKETS



Pine stumps for turpentine and rosin are loaded onto Link-Belt yard conveyor, consisting of Link-Belt C132C-K11 Promal Chain fitted with an F7 steel pusher flight every 12th link, sliding in a steel trough.

Typical chains from
the complete
LINK-BELT
line



Class SS bushed roller chain with straight sidebars — for practically any conveying or elevating service.



Class C combination chain — popular, durable, low cost design for elevators, conveyors.

Class SS bushed roller chain with offset sidebars — for heavy drive service at moderate speeds.



Class 400 swivel chain — carries cartons, cases, etc. over paths with both vertical and horizontal turns.

When inquiring check CP 6334 on handy form, pgs. 2-3

Engineers report:



"No Durco Type F Valve has ever stuck!"

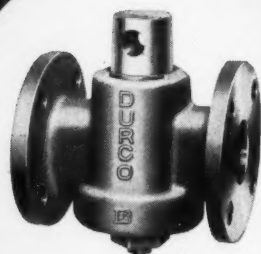
A year and a half of careful checking of several thousand Type F valves in actual installations has not revealed a single case of sticking. Even in the toughest chemical service, the Teflon sleeve prevents freezing and insures ready operation.

Let us send you all facts about this sturdy, simple corrosion resisting valve.

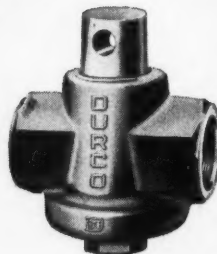


A product of
The Duriron Company, Inc.
Dayton, Ohio

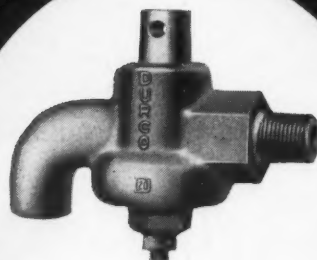
Manufacturers of corrosion resisting
equipment exclusively since 1912.



Sizes: 1/4" to 2"
Flanged ends



Sizes: 1/4" to 2"
Screwed ends



Sampling valve
male or female
connection



Write for Bulletin 647

NEW SOLUTIONS

Control of tablet weight in pressing plastic powders big help in molding . . .

200-ton press can be adjusted for
tablet weight while running

Problem: Initial step in the manufacture of 1-piece, 22-pound plastic television cabinets at The General Industries Company plant in Elyria, Ohio, is tableting plastic powders. Press that was used for this tableting or preforming operation could not be accurately adjusted while running to yield tablets of proper weight and density (1.87 pounds per tablet was requirement). Ultimate result was improper fill-out of cabinets in molds — rejects — due to improper tablet density.

Solution: A 200-ton Baldwin-Defiance (Model 45) press was installed at General Industries. This press is capable of operating at any desired rate between 30 and 60 strokes per minute to produce a corresponding number of 1.87-pound tablets. Operation is completely automatic, leaving the operator merely the job of collecting tablets from the discharge chute.

Weight or density of the tablet is readily corrected while the press is running. Fill adjustment automatically compensates the ejection stroke. A jam release makes it possible to release the machine quickly and easily if necessary. A multiple-disc-clutch flywheel and machine permits stopping the press without shutting off the motor.

The 200-ton press may also be used for making more than one tablet per stroke for smaller molded parts.

Results: Because the weight or density of tablets can be controlled at 1.87 pounds by adjusting the press while in operation, there is little chance that improper fill-out will occur during molding. General Industries reports that the 200-ton press is producing twice as many tablets per hour as the older press, even though capacity was the same.

In addition, there is much less dusting with the new press because of the close fit of the feeder boot on the sliding surface.

Source: Press is a product of the Baldwin-Lima-Hamilton Corporation, Dept. CP, Philadelphia 42, Pa. . . or for more information check CP 6335 on handy form, pages 2 & 3.

For more information on product at left, specify CP 6336 . . . see information request blank between pages 2-3.

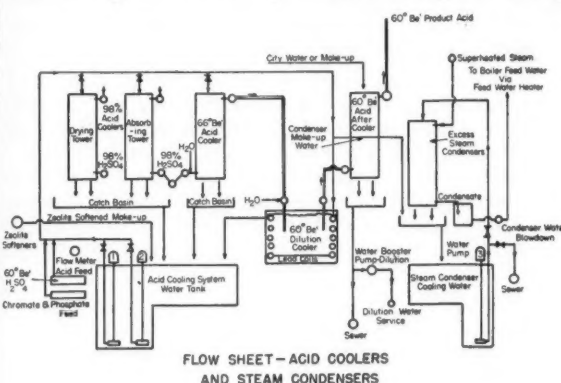
When the plant is operating on full scale, it should be able to take care of all wastes from current tank car cleaning operations in eight hours per day. However, it may be operated 16 or 24 hours per day in order to clean out the old lagoon. When this is done, the site can be filled in, thereby getting rid of an old "eyesore."

Plant's new acid cooling system eliminates build-up of scale from well water . . .

recirculated city water sprayed on cast iron sections
cools acid partly by evaporation

This cooling system consisted of 21 stacks of 16 National Radiator cast iron cooling sections each for the 98% acid, and was arranged on 18" centers. Scale was cleaned off the tubes at regular intervals, but down-time limitations prevented doing a thorough job. Under these conditions, it was necessary to have spare sets of cooling sections for replacements while fouled sections were sand-blasted to remove accumulated scale.

Solution: Cooling system was re-designed to that shown in the diagram. By increasing the cooling surface (using more sections) to allow a higher cooling

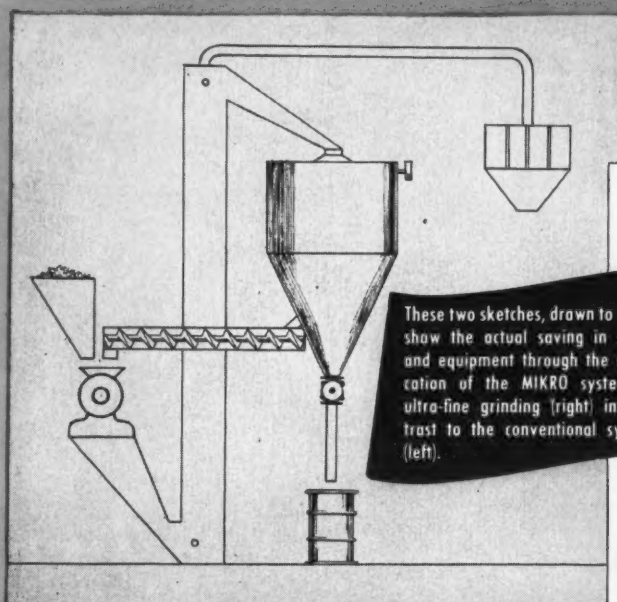


Storage capacity of the system is 8000 gal of water, but
(Continued on next page)

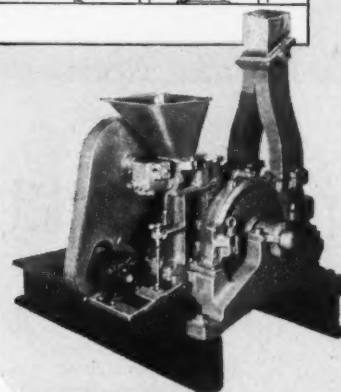
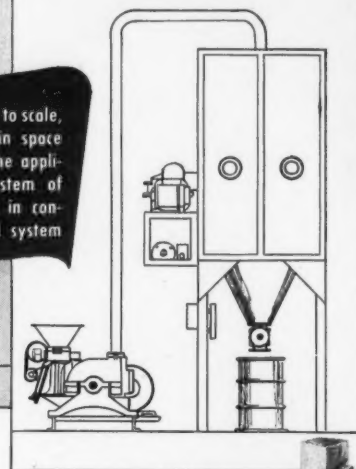
SAVE AND SIMPLIFY

By this Process of ELIMINATION

and REDUCTION



These two sketches, drawn to scale, show the actual saving in space and equipment through the application of the MIKRO system of ultra-fine grinding (right) in contrast to the conventional system (left).



MIKRO-ATOMIZER for ultra-fine grinds

The MIKRO-ATOMIZER . . .

ELIMINATES: Air Separator—

Bucket Elevator — Screw Conveyor

**REDUCES: Headroom — Floor Space —
Extra Handling or Equipment**

If your need is for ultra-fine grinds requiring air classification rather than screening, the MIKRO-ATOMIZER is your complete answer. It is an entire system producing perfectly blended grinds in the lower micron range in a single pass at exceptionally low temperature rises A 3-function machine eliminating much of the accessory equipment used in conventional systems.

With its built-in air separator, the MIKRO-ATOMIZER simplifies the flow chart by grinding, air-classifying and conveying in one operation. And its 3-function service is reflected in 3-fold saving:—lower initial and maintenance costs . . . lower cost of production per hp/hr as compared with conventional systems . . . substantial economy in operating space, or in construction costs if you are planning a new building.

Slight adjustments in the MIKRO-ATOMIZER permit varying degrees of fineness. If necessary you can actually produce two degrees of fineness in one operation.

If you have ultra-fine grinding problems don't fail to investigate this 3-function MIKRO.

**Other members
of the MIKRO "family:"**

The MIKRO-PULVERIZER
—for granular or fine grinds.

The MIKRO-COLLECTOR
—for general air clarification and
saving material thru adequate dust
control.

SEND FOR special MIKRO-ATOMIZER bulletin

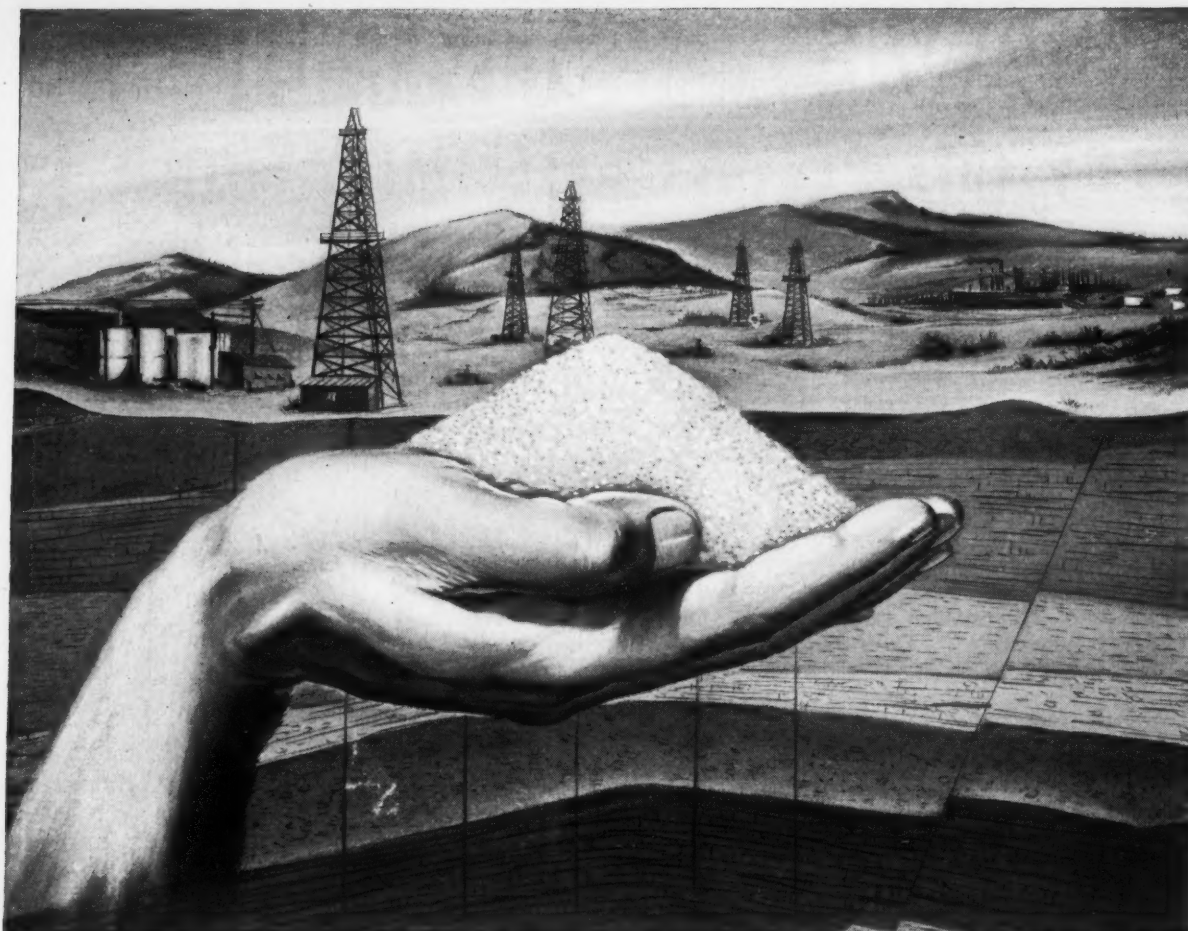
MIKRO-PULVERIZER -ATOMIZER

Reg. U. S. Pat. Off.
Also Makers of the MIKRO-COLLECTOR

PULVERIZING MACHINERY COMPANY
60 Chatham Road Summit, New Jersey

PRESERVE OUR HERITAGE: FAITH, FREEDOM AND INCENTIVE

When inquiring check CP 6337 on handy form, pgs. 2-3



"Lift-up powder" for tired oil wells

**How Celite
filtration
helps boost
oil output**

To BOOST THE OUTPUT of "tired" oil wells bordering on the limit of economic production, profit-conscious operators inject water under extreme pressure into the porous oil sandstone and force out the accumulated oil. But first, they filter this repressurizing water with Celite® to remove the suspended solids which would eventually clog the microscopic pores of the sandstone, thus blocking the flow of water. *All waters contain at least a trace of these troublesome impurities.*

Celite's ability to do an exceptional filtering job can be attributed to these important factors which make it unique among filter aids:

Carefully processed from the purest deposit of diatomaceous silica known, Celite is available in nine standard grades—each designed to trap out

suspended impurities of a given size and type. Whenever you reorder, you are assured of the same uniform, accurately graded powder received in your initial order. Thus, with Celite, you can count on consistent clarity in your filtrates—at highest rate of flow—month after month, year after year.

The secondary recovery of oil by water flooding is just one of many processes in which Celite has provided the absolute clarity vital to a successful operation. The proper grade of Johns-Manville filter aid will assure you the same results—regardless of the product or process involved. To have a Celite Filtration Engineer study your problem and offer recommendations, simply write Johns-Manville, Box 290, N. Y. 16. No cost or obligation.

*Reg. U. S. Pat. Off.



Johns-Manville CELITE
FILTER AIDS

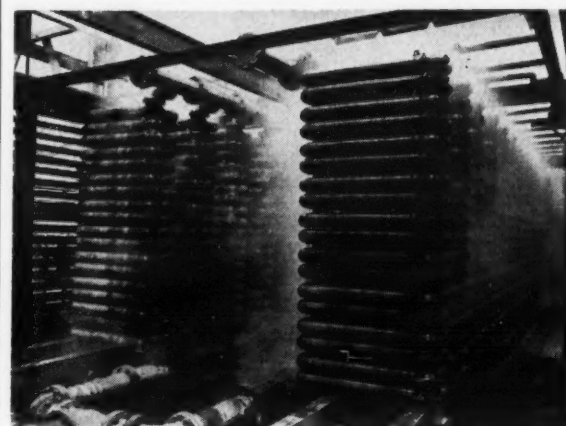
When inquiring check CP 6338 on handy form, pgs. 2-3

NEW SOLUTIONS of processing problems

(Continued from preceding page)

5000 gal has been maintained for circulation. System can run with an average water temperature as high as 125°F, such as during the summer, but water temperature is around 85 or 90°F during the winter. Water flow rate for which system was designed is 1000 gpm, with a calculated make-up of 40 gpm to replace evaporation, during the summer. Although plant had not been operated under summer conditions at time of writing, a flow of 400 gpm with 20 gpm make-up, near zero atmospheric temperature, gives an indication that system will surely meet design expectations during hot weather.

Principal part of the new system is used for cooling the 98% acid from drying tower and absorbing tower. It consists of two sets of cooling sections, each having 15 stacks of 18 National Radiator cast iron cooling sections,



Principal part of new cooling system for 98% sulfuric acid. Recirculated water is sprayed over the top of these cast iron cooling sections through which the hot acid is run

connected for parallel flow of absorbing tower acid and drying tower acid. These stacks, spaced on 28" centers, are supported 13' above ground level, rise to a height of 23', and are supported by a steel structure. They are made of high grade cast iron and have internal fins for maximum heat transfer rate.

Cooling water also enters two other coolers, as seen in diagram. One of these is a separate group of National Radiator cooling sections for an intermediate product of 66° Be which results from dilution of the cooled absorbing tower acid. It consists of three stacks, 14 sections high, arranged for parallel flow. The other cooler is a submerged lead coil unit for the end product of 60° Be which results from dilution of the cooled 66° Be acid.

All four coolers are supplied with cooling water from a common water tank by two pumps. Water returns by gravity from the two catch basins and the lead coils.

Another National Radiator after-cooler, consisting of 32 sections arranged in two stacks of 16 sections each in series, completes cooling of the final product and delivers 60° Be acid at 90°F to storage tanks.

The 98% acid normally enters cooling coils at 180-190°F and flows at 300 gpm through each of the parallel banks of cooling stacks. Maximum temperature of the entering acid may, however, be as high as 240°F. Designed

For more information on product advertised at right, specify CP 6339 . . . see information request blank between pages 2-3.



CHEMICAL PROCESSING

IT ALWAYS PAYS TO SPECIFY

LADISH

Controlled Quality

PIPE FITTINGS



...to be sure
of sound
welds
and fast
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TO MARK PROGRESS

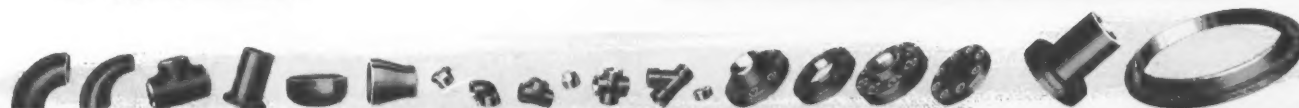
Keeping welding costs down to a minimum and erection schedules on time...these are important advantages you can assure to any piping job by installing Ladish Controlled Quality fittings. Metallurgical controls over materials and methods provide an assurance of uniform weldability in every Ladish fitting...and thorough inspection to rigid standards of physical dimensions and geometric accuracy assures fast piping assembly.

THE COMPLETE *Controlled Quality* FITTINGS LINE
PRODUCED UNDER ONE ROOF...ONE RESPONSIBILITY

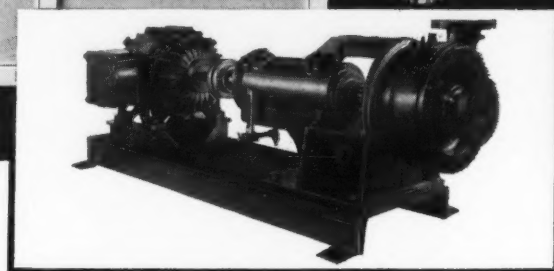
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ALLIS-CHALMERS CHEMICAL PUMP



NEW

Specially Designed for Processing Operations

- ★ Choice of Materials
- ★ Oil Lubricated Bearings
- ★ Temperatures to 500° F.
- ★ Sizes to 1200 GPM, 250 Ft Head
- ★ Stuffing Box or Mechanical Seal

LONG LIFE, high efficiency, easy maintenance; you get them all from this new Allis-Chalmers Chemical Pump. A wide choice of materials plus application engineering by men who know how to select the right material for your job means longest possible parts life and low maintenance costs no matter what you pump.

There is plenty of room between pump and pedestal for easy maintenance but rigidity has not been sacrificed. Maximum interchangeability of parts between sizes keeps parts inventory low.

ONE DEPENDABLE SOURCE

Allis-Chalmers can supply you with a complete pumping unit—pump, motor, drive and control — all of coordinated design and manufacture and all mounted on a rigid base ready to install.

To get more information on this new Allis-Chalmers Chemical Pump, call your Allis-Chalmers Authorized Distributor or District Office. Or write to Allis-Chalmers, Milwaukee 1, Wis. for Bulletin 52B7638.

A-3405

Texrope and Vari-Pitch are Allis-Chalmers trademarks.

ALLIS-CHALMERS

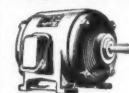


Sold . . .

Applied . . .

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by Allis-Chalmers Authorized Dealers, Certified Service Shops and Sales Offices throughout the country.



MOTORS — ½ to 25,000 hp and up. All types.

CONTROL — Manual, magnetic and combination starters; push button stations and components for complete control systems.



TEXROPE — Belts in all sizes and sections, standard and Vari-Pitch sheaves, speed changers.

When inquiring check CP 6340 on handy form, pgs. 2-3

exit temperature is 140°F for drying tower acid and 150°F for absorbing tower acid, without allowing for cooling obtained by evaporation during free fall of water to catch basin. Actual acid temperature on leaving coolers has been 120°F in winter operation. Approximately eight tons/hr of 66° Be acid are cooled from 220 to 140°F by the system, and ten tons/hr of 60° Be are cooled from 260 to 130°F.

The moderate amount of make-up water is treated to prevent scaling and corrosion. Water is given Zeolite softening and the Betz "Dianodic" corrosion inhibiting treatment. The latter consists of a controlled ratio of phosphate and chromate inhibitors in low concentrations producing a pH of about 6.5.

Results: The new recirculating water installation, making extensive use of cooling by evaporation, eliminates the scaling problem and its attendant difficulties of frequent cleaning and high maintenance costs.

To increase further the efficiency of plant operation, National Radiator cooling sections are being used for condensing blow-down steam from the boilers. This cooler, consisting of 150 sections arranged in ten stacks, each made up of 15 sections, has been designed to recover 7000 lb/hr of five-psi steam which has been going to the atmosphere.

Cooling water for this system will be the blow-down tapped from the line supplying spray nozzles of the 98% acid coolers. Waste cooling water, the blow-down from the condenser system, will have accomplished a maximum of cooling through two systems and will go to the sewer at a temperature approaching the boiling point. Recovered steam will have the high quality of distilled water, thus reducing the cost of treatment of boiler make-up.

Source: The National Radiator Company, Heat Transfer Division, Dept. CP, Johnstown, Pa. . . or for more information check CP 6341 on handy form, pages 2 & 3.

Temperature of outdoor tank stays at 34 to 44°F the year 'round . . .

regulator controls steam flow to tank coil in winter, water flow in summer; converts easily

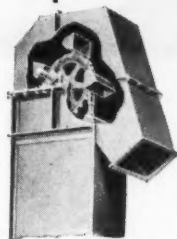
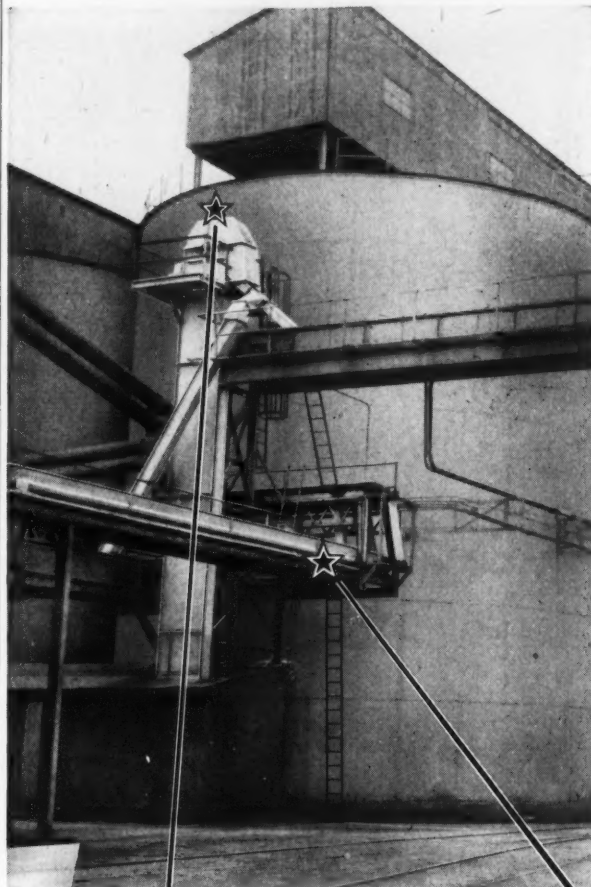
Problem: Temperature of the contents of an outdoor liquid storage tank in a chemical plant in Marietta, Ohio, had to be held within the range of 34 to 44°F the year 'round. A coil in the tank carried steam or water, but a system of control was needed to hold the temperature required during the highly variable weather conditions.

Solution: Steam and water inlets are manifolded to pass through a Leslie Class T temperature regulator. In the winter, 90-psi steam is run through the regulator and coil; in the summer, 50-psi water (at 40°F) is run through. Regulator is readily converted from heating to cooling service, in the line, by rotating pilot unit at top of unit 180°. The liquid-filled thermostatic element that senses temperature changes in the tank has a 100°F adjustable temperature range; hence, conversion need be conducted only in the spring and fall.

Results: Arrangement has been performing satisfactorily since installation more than three years ago. It is maintaining temperatures well within the required range.

Source: Regulator is product of Leslie Co., Dept. CP, Lyndhurst, N. J. . . or for more information check CP 6342 on handy form, pages 2 and 3.

MATCH YOUR JOB of Materials Handling... with LINK-BELT Bucket Elevators and Screw Conveyors



Centrifugal discharge bucket elevator runs at high speeds for high capacities. Suitable for most materials.

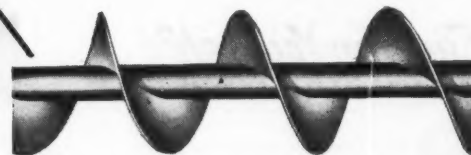
LINK-BELT offers you the most diversified line of both . . . plus wide engineering experience

MOVE bulk materials with top efficiency. Choose your bucket elevators and screw conveyors from the complete Link-Belt line . . . engineered to meet your exact requirements.

For maximum results — different materials and varying conditions require specific types of materials handling equipment. That's why Link-Belt builds many types and sizes of enclosed conveying equipment . . . the widest range of bucket elevators and screw conveyors.

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Midwest soybean oil mill uses several combinations of Link-Belt Bucket Elevators and Screw Conveyors to insure smooth flow of beans throughout process.



Helicoid or Sectional Conveyor Screws — for general screw conveyor applications, — may also be furnished in the metal and finish best suited to your purpose and with components selected from the most complete line.

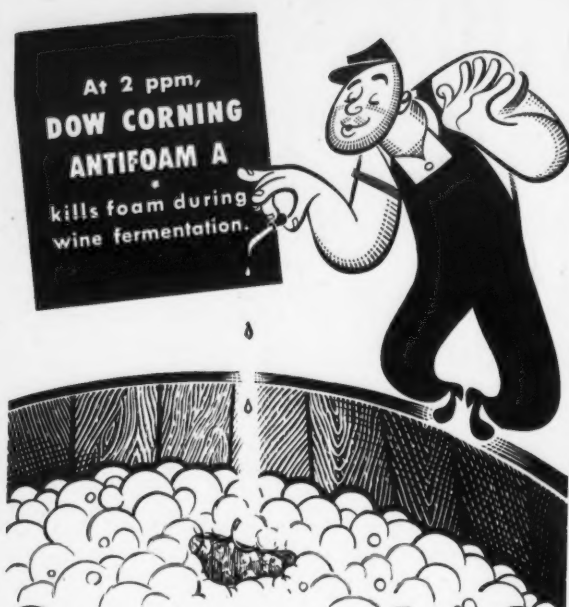
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LINK-BELT COMPANY: Chicago 8, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8, Springs (South Africa). Offices in principal cities.

12,340-A

When inquiring check CP 6343 on handy form, pgs. 2-3



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NEW SOLUTIONS of processing problems

Brewery expansion simplified by use of tubular conveyor for unloading lauter tubs . . .

self-feeding unit bends around existing pipelines and equipment, uses no transfer points

Problem: Spent grain was removed from lauter tubes by screw conveyor at The Stroh Brewery Co. in Detroit. The original building had been put up with the idea of leaving room for expansion to meet doubled production

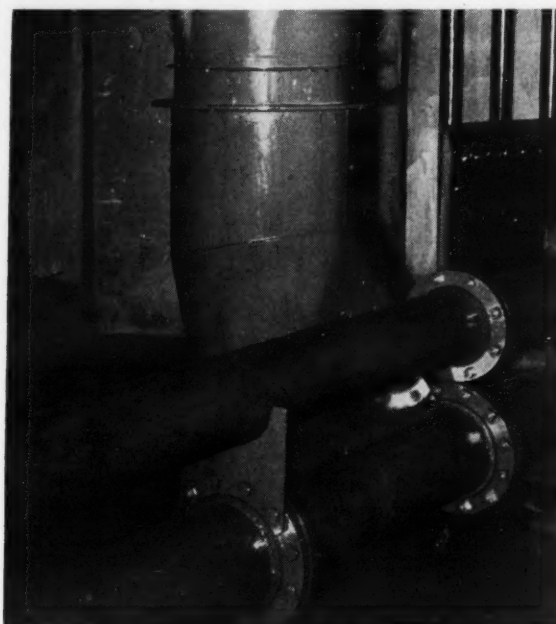


Fig 1 — Discharge chute from lauter tub is welded to bottom carry run of tubular conveyor

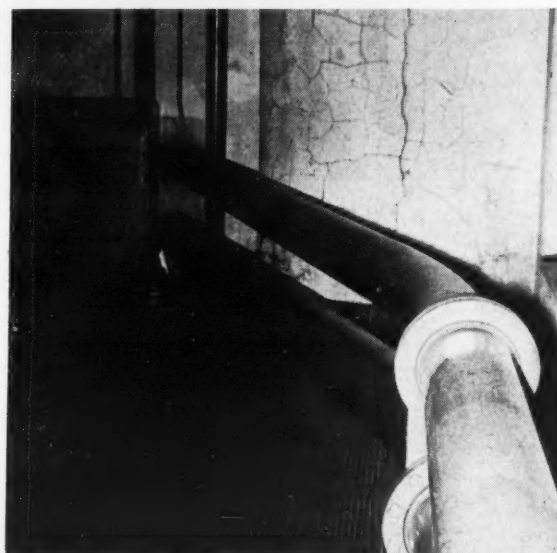


Fig 2 — This shows how the tubular conveyor fits into tight places without disturbing existing equipment

when the time came. When this expansion was due, management ran into complications trying to install another set of screw conveyors in the space available. Existing piping and other obstructions were in the way.

Solution. The answer was found in Hapman tubular

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ENTOLETER DIVISION

The Safety Car Heating and Lighting Co., Inc.
1185 Dixwell Avenue, New Haven 4, Conn.

When inquiring check CP 6345 on handy form, pgs. 2-3

CHEMICAL PROCESSING

When inquiring check CP 6344 on handy form, pgs. 2-3

conveyors, which consist of regularly spaced, synthetic rubber, circular flights or discs mounted on a sealed-pin chain operating within standard pipes or tubing. These units are constructed to be tight against vapors, moisture and dust. They operate efficiently in planes and angles (see Fig 2) and do not require much support in use.

At Stroh, a 10" diameter conveyor is used to discharge about 40 tons/hr (23 cfm) of wet spent grain from two lauter tubs. It takes about 40 to 45 minutes to empty the tubs. Drive and discharge are outside of the building. Discharge goes to an existing screw conveyor at a lower level. Tubular conveyor was bent as needed to pass around all obstructions.

Results: Conveyor was installed without any alteration of existing piping. It forms a continuous closed circuit without transfer points. The conveyor loads itself from the tubs, without choking. Operation has been quite satisfactory since installation about a year ago.

Source: Hapman Conveyors, Inc., Division of Hapman-Dutton Company, Dept. CP, 630 Gibson St., Kalamazoo 6, Mich. . . or for more information check CP 6346 on handy form, pages 2 and 3.

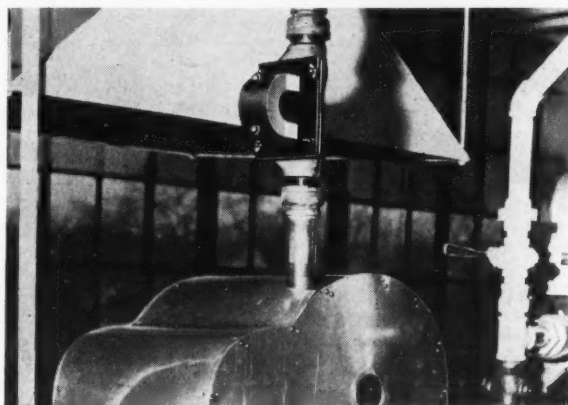
Mentholatum pumps protected with magnetic trap . . .

stainless-steel-faced unit also prevents contamination of product with fine iron particles

Problem: Experience of the Mentholatum Company, Buffalo, N. Y., showed that stray iron or steel in raw materials could cause serious damage to any of five pumps installed in a hot Mentholatum line, besides acting as product contaminant. Mentholatum is viscous at room temperature but flows freely when hot.

Solution: A 2" diam stainless-steel-faced magnetic trap was installed in the line directly after the first mixing tank. This trap holds both large and small pieces of tramp iron for periodic removal.

Results: Trap is proving highly efficient in protecting the pumps. In addition, it removes a substantial



Magnetic trap in hot Mentholatum line

amount of fine iron, thereby guaranteeing purity of finished product. The factory manager states that use of the trap has greatly reduced maintenance, repair costs and downtime.

Source: Magnetic trap made by Eriez Manufacturing Company, Dept. CP, Erie, Pa. . . or for more information check CP 6347 on handy form, pages 2 and 3.



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NIAGARA ALKALI COMPANY

60 East 42nd Street, New York 17, N. Y.

When inquiring check CP 6348 on handy form, pgs. 2-3

Chart lists coatings components

Reference chart gives complete information on protective coatings components. Issued by Advance Solvents & Chemical Corp., Dept. CP, 245 Fifth Ave., New York 16, N. Y. When inquiring specify CP 6349 on handy form, pages 2 and 3.

Plastic record preforms made by compressing dry ingredients into discs in press . . .

method increases production four times, requires two men instead of six

Problem: Voco, Inc., Brooklyn, N. Y., manufacturer of pure vinylite Kiddie Records, customarily bought preforms from which the records were pressed. As production climbed, the company began investigating the possibility of making its own preforms.

Customary method of manufacturing these preforms has been to mix ingredients for six to ten hours in a Banbury mixer, extrude the resulting plastic mass into spaghetti forms, and calender these forms. The resulting sheet is scored into squares, imprinted, and then broken to give the customary squares. An installation such as used in this process costs as much as \$50,000 to \$100,000, which is prohibitive to all but the largest record makers.

Solution: A new method of compounding powders is now being employed at the plant. Voco purchases molding powder, plasticizer, and dye in an alcohol base, and



Record preforms ejected from press slide down a chute with some excess powder. Chute has perforated sheet covering false bottom so that most of the powder is separated from the discs on the way down. Note that chute discharges into screen-covered drum. Preforms are stacked in container as illustrated

mixes them together in a dough mixer. The mix is fed into a Stokes Dual-Pressure Press which compresses the powdery material into a disc. This disc has a hole in the center and is used directly in the record molding operation.

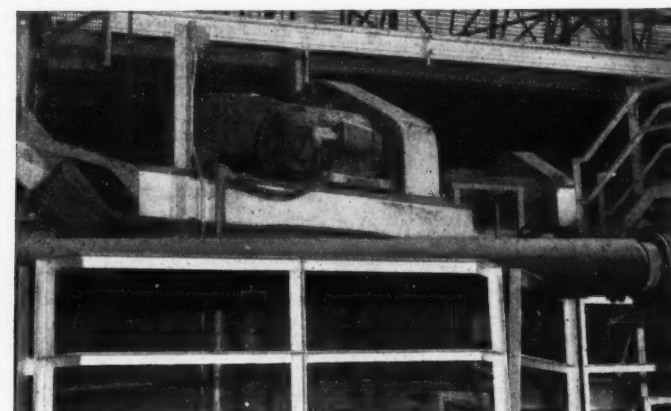
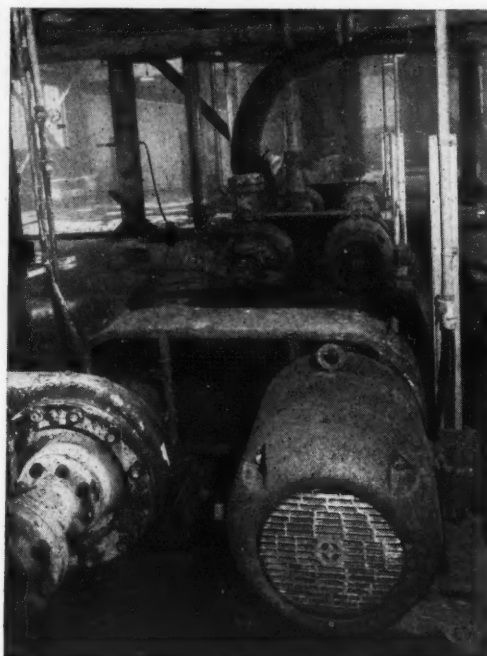
Two Stokes presses are used in this way at Voco, one

How 3 potash refineries beat corrosion problems with standard G-E motors

Totally enclosed and cast-iron, TRI/CLAD motors stand up to continuous attacks of corrosive-salt solutions

These three potash refineries in the Carlsbad, New Mexico, area rely extensively on standard General Electric totally enclosed fan-cooled Tri-Clad* motors. Strong on corrosion defense, these motors can be located wherever convenient for driving machinery, space economy, maintenance accessibility. And because they're of standard design, initial cost is lower, shipment faster. For more information, write for Bulletin GEA-4131. General Electric Company, Schenectady 5, N. Y.

AT U.S. POTASH COMPANY



↑ Cast-iron enclosures on Tri-Clad totally enclosed motors are high in corrosion resistance. That's one reason why these motors are ideal for chemical-plant jobs like this, in which a 40-hp, 1200-rpm unit drives a dissolver agitator.

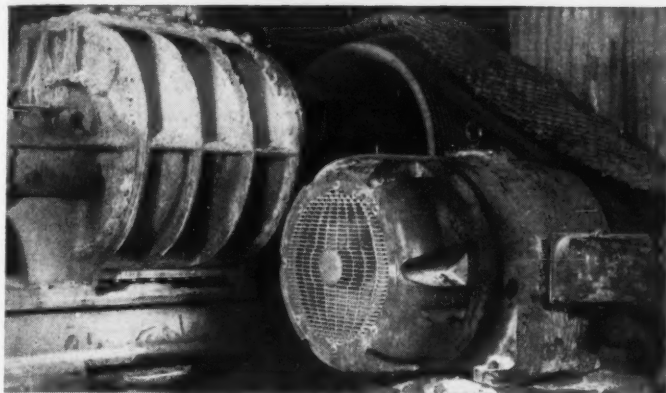
← Driving brine pumps in the refinery, these Tri-Clad motors are rated 30 hp, 440 volts, 1800 rpm. U. S. Potash Company uses dissolvers to separate sodium chloride from potassium chloride in processing the potash salts.

* Registered trademark of General Electric Co.

GENERAL  ELECTRIC

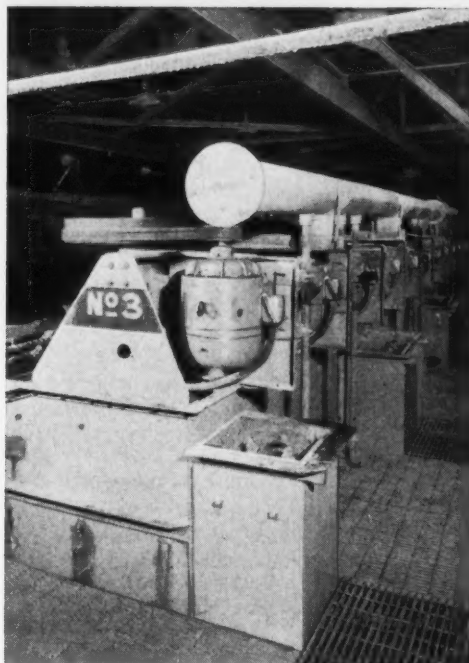
662-36

AT POTASH COMPANY OF AMERICA

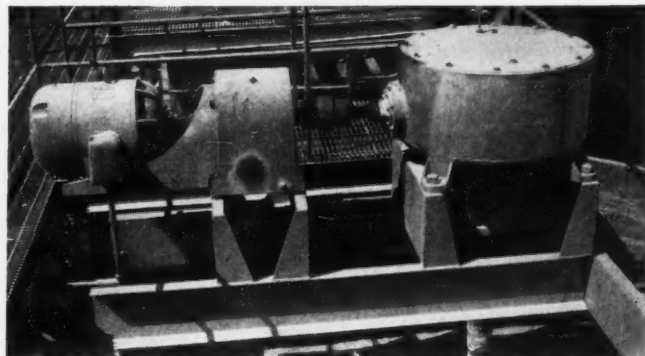
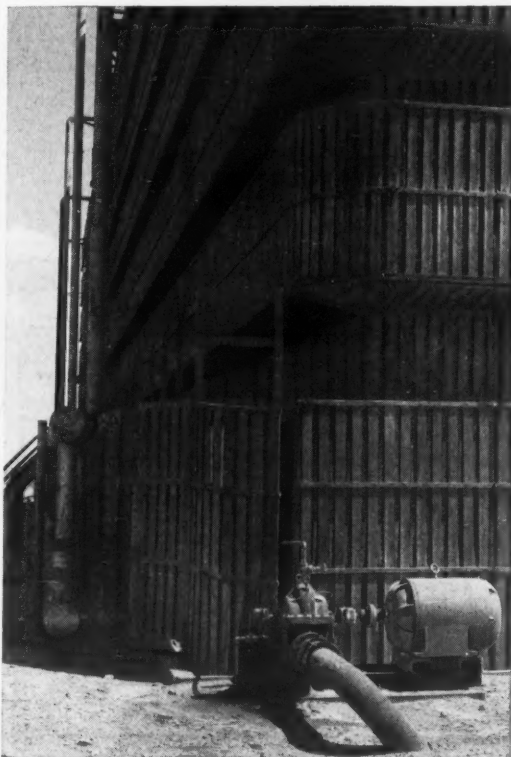


↑ Precision-machined joints assure tight fits to prevent entry of moisture and brine, and bearings are protected against dust as well as corrosion. This Tri-Clad totally enclosed motor—rated 150 hp, 900 rpm—drives the blower for a fines exhauster in the PCA refinery.

← In tough flotation-cell service—where production interruptions from motor failure—can be quite costly—Tri-Clad totally enclosed motors keep going despite occasional splashing from salt brine. This bank of twelve 5-hp, 220/440-volt, 1200-rpm units drive agitators in the refinery's flotation cells.



AT INTERNATIONAL MINERAL AND CHEMICAL CORPORATION



↑ Because of the extra protection afforded by their cast-iron double-wall frame and end shields, Tri-Clad totally enclosed motors have been popular standards for years with chemical plants. This 20-hp, 220/440-volt, 1800-rpm unit requires little or no maintenance in driving a feed-tank turboagitator in the refinery.

← Tri-Clad totally enclosed motors withstand the effects of exposure to weather as well as various chemical-plant brines. This unit—rated 100 hp, 440 volts, 1800 rpm—is located outdoors to drive a circulating pump at the main cooling tower of International Mineral and Chemical Corporation's refinery.



**Totally enclosed fan-cooled
MOTORS
for chemical plants**

When inquiring check CP 6350 on handy form, pgs. 2-3

NEW SOLUTIONS of processing problems

making $2\frac{1}{4}$ " and the other $4\frac{1}{4}$ " preforms at a rate of 50 per minute per press. Preforms have uniform density throughout, and their edges are sharp, firm, and free from crumbling.

Results: Cost of the original black square preforms was 52c per pound. On the other hand, molding powder costs Voco 32c per pound, and it costs about 4 or 5c additional per pound to produce the preforms as they are now being made.

Estimates are that production has increased four times since installation of the Stokes presses. Two men operate these presses, as opposed to the six men which would have been needed for conventional preforming process.

Presses can be readily cleaned for change-over from one color to another. Equipment used in conventional preforming is not so easily cleaned.

Voco is planning on compounding "filled" materials for records of any sound fidelity, and the Stokes presses will probably play an important role in this project. The filled records will be produced from pure resins and other inert elements. The discs will be non-breakable and lower in cost, according to Voco.

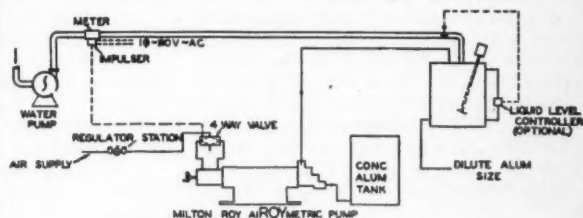
Source: F. J. Stokes Machine Company, Dept. CP, Tabor Rd., Philadelphia 20, Pa. . . or for more information check CP 6351 on handy form, pages 2 and 3.

Air powered proportioning pump solves papermaker's problem most economically . . .

system accurately controls a six-fold dilution of alum used for sizing

Problem: A southern paper plant sizes some of their product with alum. Shipped to them in about a 60% concentration, the papermaker's alum must be diluted to the range of about 11% by weight with the exact value varying according to plant operating conditions.

Solution: An automatic dilution system was installed, using an Airoymetric (metering) pump. As shown in the schematic drawing, the diluting water is pumped through a meter which electrically controls the air rate powering the alum pump. It is the alum pump which does the

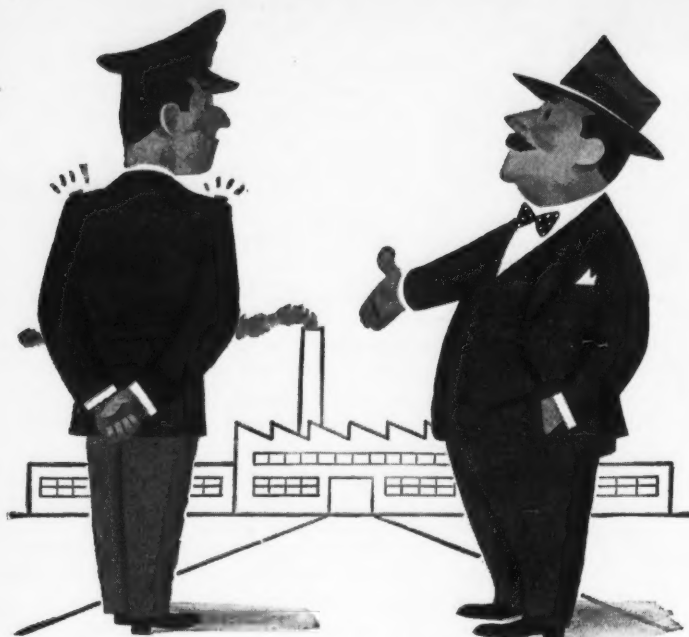


Schematic of dilution system used for alum size

actual proportioning. In this case it handled a maximum of 450 gph against 50 psi. Both water and concentrated alum are fed to a mixing tank and held until needed. This tank is easily adapted to liquid level control of the water and hence alum flowing to it.

Results: The installation, after well over a year, continues to function satisfactorily. Not only was the installed cost very reasonable, but the continuing operation is, itself, an economical one.

Source: System was designed by Milton Roy Company, Dept. CP, 1300 E. Mermaid Ave., Chestnut Hill, Philadelphia 18, Pa. . . or for more information check CP 6352 on handy form, pages 2 and 3.



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When inquiring check CP 6353 on handy form, pgs. 2-3

NEW SOLUTIONS of processing problems

Temperature programming of four test stills done by two instruments...

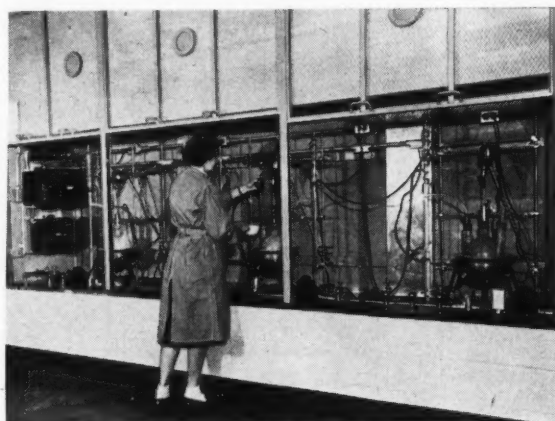
multi-point controller, program unit assure accuracy of test results in resin, varnish development

Problem: Four small refluxing stills for making test runs in development of improved products were controlled manually at Socony Paint Products Company of Metuchen, N. J. Heat was controlled by manual adjustment of four variacs, one for each still, and temperatures were read on four separate bi-metallic thermometers, one inserted in the top of each still. It was important that each still be run on a definite program; otherwise, tests would not be accurate and would have to be repeated. With one operator handling all four stills with this method of control, it was quite difficult to obtain the accuracy demanded.

The company then considered automatic control. However, ordinarily four controllers and four programming units would be needed for the set-up, a rather expensive investment. Therefore, other control methods were investigated to determine their suitability.

Solution: Socony found they could do the job with only two instruments: a TAG Model 48337 Celestray multiple-point indicating controller, and a TAG Model 48337 program unit. With this instrumentation, four tests employing the same program can be closely controlled. The only manual labor involved is adding various solvents at defined stages in the program.

Operator standardizes indicating controller and program unit, turns on the power (115 volts, 60 cps), and all four stills will be heated according to the program. Program



Pilot plant of Socony Paint Products Company holds these four stills for developing improved synthetic resins and varnishes. Four-point indicating controller and a program unit (both at far left) automatically control simultaneous heating of the stills

unit contains a cam which is switched periodically from one point to another, transmitting the program to "hold-in" relays within controlling instrument. These, in turn, control power input to stills. Controller can be used manually, without program unit, if tests are to be conducted non-simultaneously.

Results: According to a laboratory engineer at Socony, "The set-up is very effective equipment for multiplying the amount of work a single operator can do accurately. There is less chance to have to repeat work." With the system, results from three stills can be considered conclusive even though the fourth still breaks.

Investment cost of the two instruments is about 1/3 the

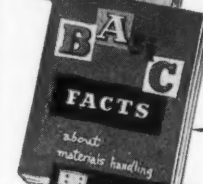
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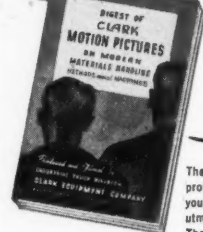
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on handy form, pgs. 2-3

CHEMICAL PROCESSING

NEW SOLUTIONS of processing problems

cost of the eight instruments (four controllers and four program units) of conventional system.

Source: TAG instruments are made by Tagliabue Instruments Division, Weston Electrical Instrument Corporation, Dept. CP, 614 Frelinghuysen Ave., Newark 5, N. J. . . or for more information check CP 6355 on handy form, pages 2 and 3.

Spent filter clay removed to outdoor settling basin by eductor system . . .

replaces inefficient manual materials handling system

Problem: Marcus Hook, Pa., refinery of Sun Oil Company employed manual means for moving spent clay from each of 10 filter shells to a settling basin outside the building. Time involved in this manual operation led company engineers to investigate a more efficient system.

Solution: A hopper-type eductor was mounted on a movable platform—hopper located above the platform, and the eductor below—as illustrated. When it is necessary to remove spent clay from any one of the 10 filter shells, a movable secondary hopper is rolled under the



Eductor removing spent clay from filter shells to outdoor settling basin

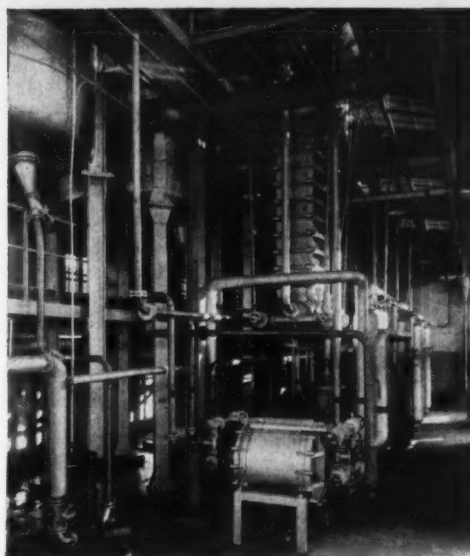
man-head of the filter shell to receive the spent clay. A gate in this secondary hopper is regulated to allow the proper amount of clay to feed into the eductor hopper.

Water under pressure, by-passed from the inlet line on the eductor, issues from wash-down nozzles in the eductor hopper and washes the clay down into the eductor chamber. Water under pressure entrains the clay in the eductor chamber and discharges it through a flexible hose with sufficient force to carry the slurry to the settling basin.

Results: Removing spent clay to the settling basin by eductor involves negligible time; Sun engineers report they now have a very efficient materials handling system.

Source: The SK Eductor in this installation is one of a wide variety of standard eductors manufactured by the Schutte and Koerting Company, Dept. CP, Cornwells Heights, Bucks County, Pa. . . or for more information check CP 6356 on handy form, pages 2 and 3.

SEPTEMBER, 1951

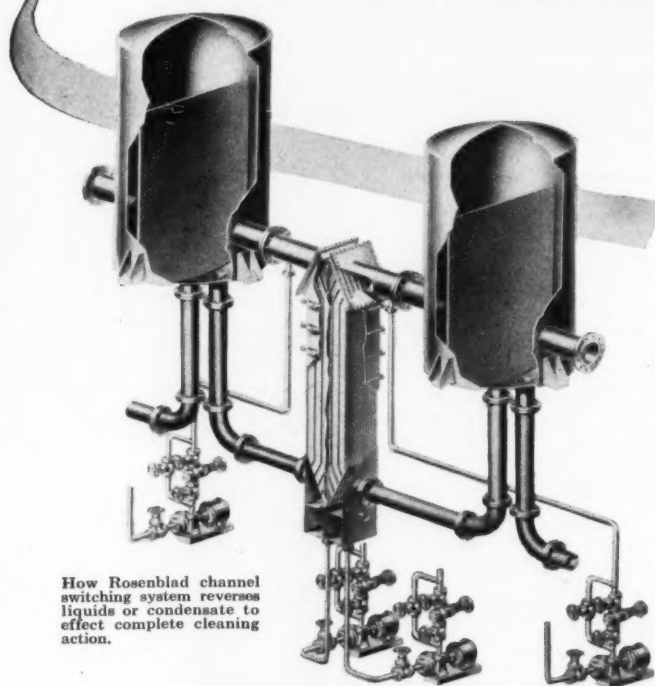


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*Patents applied for

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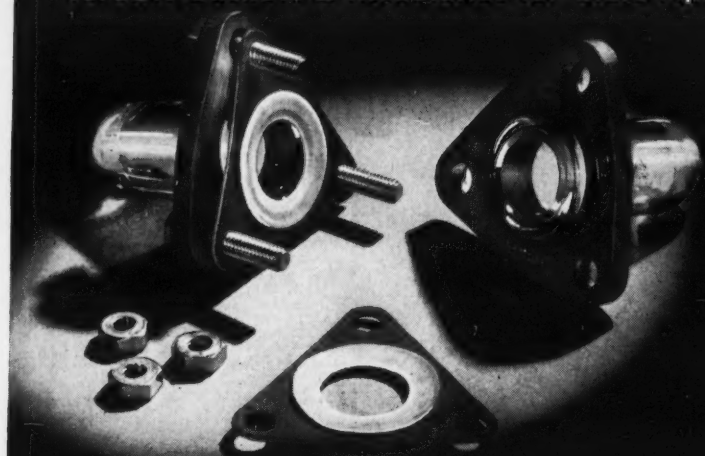
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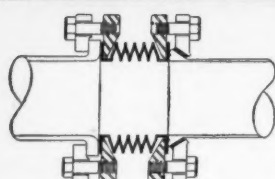
When inquiring check CP 6357 on handy form, pgs. 2-3

CHEMISEAL

TEFLON Gaskets & Accessories for Glass Pipe

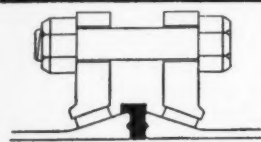


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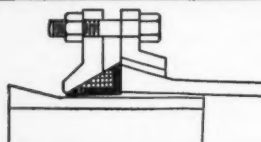


(Above:) Chemiseal Jacketed Gaskets, Types T6N or T6-300 are standard for Corning conical flanges, seal at unusually low bolt load.

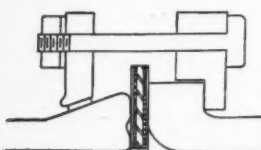
(At left:) Chemiseal Expansion Joints, No. 212 for use where thermal expansion, vibration or misalignment requires a flexible pipe section. Sizes from 1 in. to 12 in. I.P.S.



Chemiseal Snap-on type 820 Gaskets. Molded to match contour of conical-end glass pipe, they assure perfect, automatic centering of joints and free flow of materials. Made for all standard pipe sizes from 1/4 in. to 6 in.



Chemiseal Jacketed Slip-Joint Gaskets (Teflon Jacketed Neoprene) provide positive, chemical-proof seals with low bolt loads. Made for standard pipe sizes from 1 in. to 6 in.



Chemiseal Adaptors No. 2-CRS, provide a tight, safe seal between glass coated steel or similar nozzles with large inside radii, and vessels of glass-lined steel, porcelain, Havg, etc. A steel bearing ring provides rigidity. Resilient core assures perfect seal. The Teflon Jacket prevents chemical attack and contamination.

**UNITED
STATES
GASKET
COMPANY**

TEFLON
PRODUCTS DIVISION



618 N. 10TH STREET, CAMDEN, N.J.

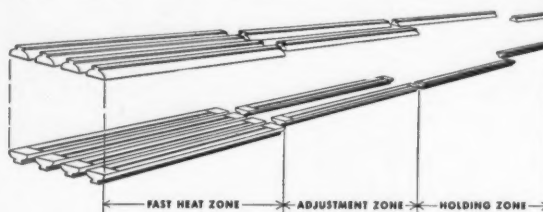
NEW SOLUTIONS of processing problems

Rubber cured 50% faster by radiant heat system than with hot water . . .

no longer are there any rejects due to water spots

Problem: Capacity for curing latex-foam sponge rubber with a hot water system at the Los Angeles plant of the Lien Rubber Mfg. Company was 16 molds per hour. Production resulted in a large percentage of rejects due to water spots on the finished product.

Solution: Method for curing was converted from hot water to infrared heat. Latex foam compound is now poured into aluminum molds which are immediately conveyed through the zoned infrared oven. Oven is 42' long



Arrangement of electric radiant heaters in curing oven

and wide enough to accept molds. Diagram illustrates the arrangement of thirty 1.8 kw Chromalox electric radiant heaters.

The first zone provides rapid heating, and the second adjusts the temperature to 200°F. Remaining zones maintain this required temperature. Heaters are distributed equally at top and bottom throughout the oven to assure



Radiant heat-cured latex-foam sponge rubber being stripped from molds

uniform heating of the molds. Input controllers are used to keep the mold temperature to within close limitations. After leaving the oven, the molds are water cooled to bring the temperature to about 70°F. Photograph shows a worker stripping the cured latex product from mold.

Results: With infrared radiant heaters, Lien is now

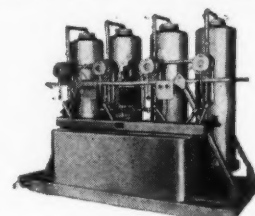
PURE WATER

AT LOWEST COST

WITH
BARNSTEAD
DEMINERALIZERS

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In countless processes better results are obtained, when pure water — free from harmful minerals is used. In fact, hundreds of manufacturers have already found that they save money, have fewer rejects and get a better product with Barnstead Demineralized Water. The cost is extremely low — as little as 5c per 1000 gallons. Operation is very simple. And with a Barnstead Demineralizer, you get the benefit of more than 75 years of specialized experience in water purification. Write for Catalog #123.

THESE FIRMS — AND MANY OTHERS —
ARE NOW USING BARNSTEAD DEMINERALIZERS

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PROMPT DELIVERIES ON MOST MODELS

Models from 5 to 1000 gallons per hour

Barnstead
STILL & STERILIZER CO.

66 Lanesville Terrace, Boston 31, Mass.

When inquiring check CP 6359
on handy form, pgs. 2-3

CHEMICAL PROCESSING

When inquiring check CP 6358 on handy form, pgs. 2-3

curing at the rate of 25 molds per hour—an increase of 50% over the former method. In addition, since no water is involved, there are no rejects due to water spots. An additional advantage of using all-metal radiant heaters lies in their ability to withstand rough handling and splashes from passing molds.

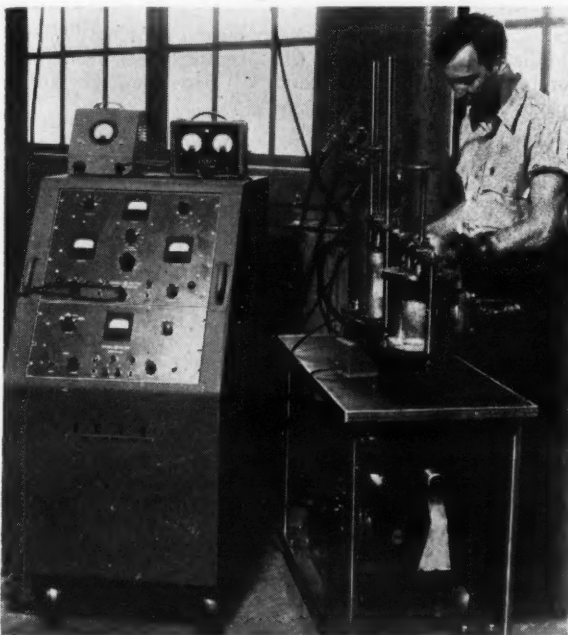
Source: Chromalox electric radiant heaters are products of Edwin L. Wiegand Company, Dept. CP, 7517 Thomas Blvd., Pittsburgh 8, Pa. . . or for more information check CP 6360 on handy form, pages 2 and 3.

Valve rejects cut 25% by leak detector . . .

helium tracer method locates minute flaws in valves for nuclear reactors and atomic piles

Problem: William Powell Valve Company, Cincinnati, found that the conventional air-pressure testing method for finding leaks in valves was not suitable for use on leak-proof valves intended for nuclear reactors and atomic piles. This method did not indicate all leaks, and did not show the exact location of leaks that were found so that they could be corrected.

Solution: A new method of leak testing has been adapted, involving the use of a G-E type M leak detector and helium tracer. In testing, valve is sealed off on a test stand and connected through the leak detector to a vacuum



Set-up for finding leaks in valves. Sealed-off valve is on test stand at right, leak detector at left

pump. Operator checks for leaks by moving a capillary tube which emits the helium tracer over entire surface of valve. If a leak is present, helium will be drawn through it into valve, and will give an indication on the detector's meter.

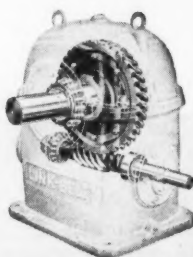
Results: Minute leaks are accurately located, and defects can be corrected. Rejects on the valves for atomic apparatus has been cut 25%, according to officials of the company.

Source: Leak detector is a product of General Electric Company, Dept. CP, Schenectady, N. Y. . . or for more information check CP 6361 on handy form, pages 2 and 3.

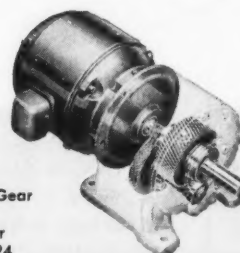
No one speed reducer solves every reduction problem



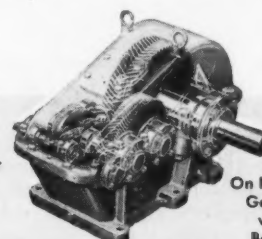
**That's why LINK-BELT
builds all 3**



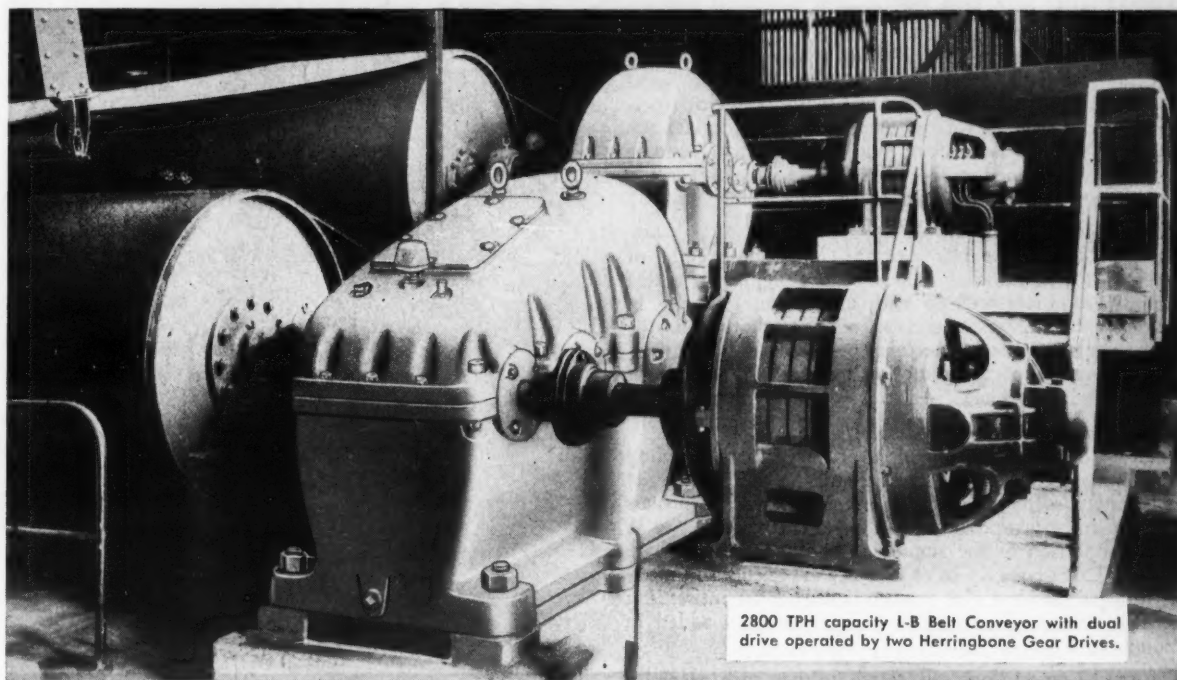
On Worm Gear
Drives
write for
Book 2324



On Gearmotor
and Helical
Gear Drives
write for
Book 2247



On Herringbone
Gear Drives
write for
Book 2419



2800 TPH capacity L-B Belt Conveyor with dual drive operated by two Herringbone Gear Drives.

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LINK-BELT COMPANY: Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8, Springs (South Africa). Offices, Factory Branch Stores and Distributors in Principal Cities.

12,238-A

When inquiring check CP 6362 on handy form, pgs. 2-3

Pigment Wetting and Dispersion Make Paint, Ink, Putty Formulation Easy

Materials

USES: Effective emulsifying agent for oil-water systems. Wetting and dispersing properties are helpful in formulation of paints, printing inks, putties, and caulking compounds.

Features: In formulation of primers, undercoats, and flat wall paints, agent promotes fast and efficient grinding, aids pigment wetting and dispersion, and reduces settling and consistency gains.

In enamels, agent improves pigment dispersion, decreases settling, stabilizes consistency, increases tinting strength of pigments, eliminates sagging, and reduces flooding.

Description: "Arlecin" is maker's soybean lecithin which is made in 6 grades to provide a suitable type of material for a variety of uses. 1) "T" is natural plastic lecithin; 2) "TS" is a soft or fluidized grade that permits pouring, simplifies handling, and offers same functional properties as T; 3) "S" is a refined plastic grade of light-amber to amber color for use where darker grades are not suitable; 4) "SS" is a soft or fluid grade comparable to S; 5) "D" is a refined grade of light-honey color for use in products demanding ultimate in light color; and 6) "DS" is a soft, fluid grade corresponding to D.

Additions of 0.5 to 1% Arlecin (based on weight of pigment) to the grinding vehicle before pigment is added markedly improves wetting with a resultant lowering in viscosity. This fact is said to offer a solution to the limitations of a roller, buhrstone, or pebble mill in grinding pigment pastes by promoting wetting of the pigment by the grinding vehicle. Arlecin aids in pigment wetting and dispersion during mixing and prior to grinding.

When the agent is used in place of zinc stearate, slightly less settling occurs during storage, and the settled material is definitely softer and readily reincorporated. Softness and ease in reincorporation of the settled material are in direct proportion to the amount of the agent used — up to 2%. Excessive gain in consistency experienced in many flat wall paints when zinc stearate is used as an antisetling agent is considerably reduced when Arlecin is added in amounts to 2%.

In formulation of long oil alkyd finishes such as architectural enamels, a puffy body is desirable to eliminate sagging and yet control flow. Addition of 0.5 to 1% of the agent (based on pigment weight) gives a permanent effect that does not detract from the quality of the enamel as happens using small amounts of water or soaps.

Because of the wetting and dispersing properties of the agent, the strength of most pigments is increased 20 to 25% by the addition of 1% of the agent (based on the weight of pigment). These same properties offer control over flooding — in brushing enamels, as little as 0.3%

Arlecin (based on pigment) is effective in systems containing chrome greens, lampblack, and other colors prone to flood. For dipping enamels, up to 1.5% is generally used.

Water emulsion paints take advantage of the protective colloid action of the agent for maintaining the emulsion and preventing migration of pigments from one phase to another. Formulation of printing inks, putties, and caulking compounds take advantage of the efficient wetting and dispersing action of the agent.

In flushed color manufacture, pigments are prepared by precipitation or grinding in aqueous systems. Transfer is then made to an oil system by the flushing process, and advantage is taken of the fact that many pigments are more readily wet by oil than by water. The pigment is removed

Soybean lecithin aids grinding, stabilizes consistency, increases tinting strength, and reduces settling, sagging and flooding

from water phase and incorporated in the oil layer during mixing. Here, the agent markedly accelerates the wetting of the pigments by the oil.

Source: Arlecin is a development of Archer-Daniels-Midland Company, Dept. CP, Minneapolis 2, Minn. . . or for more information check CP 6363 on handy form, pages 2 and 3.

Polyvinyl Resin Processes Without Plasticizer on Conventional Plastics Equipment

Heat distortion temperature is higher, electrical properties better than resins of this type now in use

USES: Particularly useful in making items for use with corrosives, in producing such things as instrument cases, tote boxes, etc., and in manufacturing electrical items such as weatherproof line wire, primary insulation, etc.

Rigid sheets can be welded by the hot gas technique when fabricating fume hoods and duct work. Tanks can be made in unsupported form, or the resin can be used as a liner for metal tanks. In the deep drawn and welded

forms, such things as pitchers, trays, funnels, buckets, and barrels can be made for use with corrosives. In general, the resin can be used as a material of construction where stainless steel or lead is currently being specified.

Features: Can be processed without plasticizers on conventional plastics equipment. It can be calendered, extruded, transfer molded, deep drawn, or vacuum formed into rigid products using standard techniques and setups. Heat distortion temperature is 170°F (obtained by method giving results closely comparable with those obtained by ASTM Heat Distortion Test at 264 psi fiber stress). This is higher than the heat distortion temperature for rigid polyvinyl chloride copolymers previously available, and thus should open new fields for articles fabricated from this type of resin.

Rigid vinyl insulation prepared from this resin has electrical properties which are superior to and unattainable with plasticized polyvinyl chloride. For instance, insulation resistance for 1/32" wall at 50°C is 20,000-35,000 megohms per 1000 ft. Power factor at this temperature and at 1000 cycles is as low as 0.012-0.017.

Description: Geon 404 is a high molecular weight polyvinyl resin that has a high resistance to most inorganic chemicals and organic materials. At ordinary temperatures it is unaffected by alkalis, acids, salts, oxidizing agents, oils, greases, alcohols, gasolines and carbon tetrachloride. Certain types of organic solvents—ketones, ethers, chlorinated hydrocarbons, and some aromatic hydrocarbons—cause swelling of the resin.

Tensile strength and flexural strength are affected to a lesser extent by loading than is the case with softer copolymer resins. Tensile strength decreased from 7000 to 4200 psi, and flexural strength from about 13,000 to 11,000 psi, when loading (fine particle size whiting) was increased from 0 to 80 parts per 100 parts resin. Similarly, modulus of elasticity increased from about 5.2 to 5.7 x 10⁵ psi.

Using the Clash-Berg method for determining the effect of temperature on stiffness, laboratory workers have found that the stiffness of unplasticized Geon 404 did not change to any great extent from +70 to -70°F. A standard compound plasticized with dioctyl phthalate stiffened rapidly as temperature was decreased.

Impact resistance by the falling ball method was found to be close to cellulose acetate, but a little lower—62 vs 80 feet at break.

It is recommended that initial compounding of Geon 404 be carried out in a banbury or on a mill where the proper stabilizers, lubricants, fillers and colors can be added. The resin can be stabilized, loaded, and lubricated with conventional materials employed with plasticized vinyls. In general, more lubricant can be used than in normal plasticized vinyl compounds. The absence of plasticizer decreases to a considerable degree the tendency for lubricants to bleed out on the surface of the compound.

Source: Product of B. F. Goodrich Chemical Company, Dept. CP, 324 Rose Bldg., Cleveland 15, Ohio . . . or for more information check CP 6364 on handy form, pages 2 and 3.

Gives creep stress data on tubing steels

Technical data card, 8½ by 11", gives technical information of value to engineers and designers in reference to equipment operating at elevated temperatures and pressures. Creep stress data are given for rates of 1% elongation in 10,000 and 100,000 hours at temperatures from 800 to 1500°F for 16 carbon, intermediate alloy and stainless steels. TDC 102 is issued by The Babcock & Wilcox Co., Dept. CP, Beaver Falls, Pa. When inquiring specify CP 6365 on handy form, pages 2 and 3.

Coming Soon . . .

A NEW PLANT...

that's really important to your company!

Victor's new elemental phosphorus plant at Silver Bow, Montana, is nearly completed. This means that more and more of the phosphates your company needs will be available.

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When inquiring check CP 6366 on handy form, pgs. 2-3

Low-temperature performance of elastomers is predetermined by laboratory tests . . .

but it's tricky job that needs experienced technologist to take all factors into account

Low-temperature effects on elastomers fall into two broad classifications: 1) those which occur rapidly, as soon as temperature equilibrium is established, and 2) those which occur only after prolonged exposure to low temperatures. Under 1) can be included: a) simple temperature effects which are indicated by gradual increase in stiffening and loss of resilience with decreasing temperature, and b) second order transitions which are indicated by a sharp increase in stiffness within a narrow temperature range. In b), brittleness may be apparent on impact loading.

Under 2) we have a) crystallization and b) plasticizer-time effects. Symptoms of a) are delayed stiffening and "boardiness" which may occur only after hours, days or weeks, depending on particular composition and conditions of exposure. Symptoms of b), include delayed stiffening and in some cases elevation of the brittle point due to incompatibility of softener at low temperatures. The effect is usually apparent only when large quantities of certain softeners are used.

The complexity of low-temperature changes in elastomers has made it difficult to develop test methods and to interpret test results. No single laboratory test or combination of laboratory tests will give the complete answer of how the material will function in service. Many test methods have been developed, but only a few have been adopted as widely accepted standard methods by the rubber industry. We will not consider actual field performance tests here, since they are specific in nature. Rather, we will concern ourselves with compound development tests—tests on laboratory-prepared specimens—designed to measure in a quantitative or semi-quantitative way the extent to which the various low-temperature changes take place in a given composition.

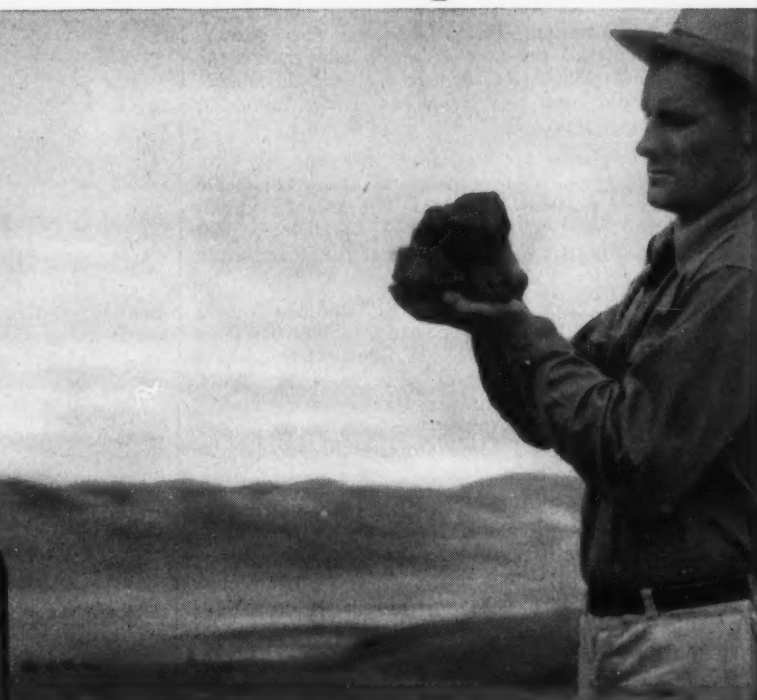
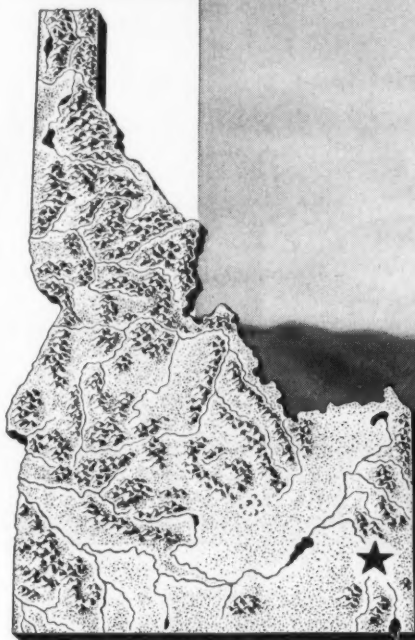
These tests are of two broad types: 1) one test for determining temperature at which a composition becomes brittle, and 2) three tests for determining stiffness as a function of temperature after short-time exposure or as a function of time at a constant temperature. We will consider only these four tests because they are the most widely used.

The ASTM D 746 brittleness test consists of clamping one end of specimen in holder, conditioning for a few minutes at test temperature, and striking other end of specimen with a striking arm operating at 6.5 fps. New specimens are tested at successively lower temperature until they break into two or more separate pieces. The temperature at which this happens is called the brittle point.

With this test, the temperature at which brittleness is evident depends critically upon rate of application of load. Consequently, the brittle point determined in the test does not necessarily correspond with temperature at which brittleness will be apparent in service. Neither does knowledge of the brittle point provide information on stiffness at temperatures above the brittle point, nor is it useful for evaluating the tendency of a composition to crystallize. For this reason, brittleness tests are frequently supplemented by stiffness tests over a range of temperatures or over a period of time at a constant temperature.

The stiffness test employing durometer hardness (ASTM D 676) is most widely used because of its simplicity. In determining changes due to simple temperature effects or second order transitions, specimen is conditioned for short

MONSANTO Expands



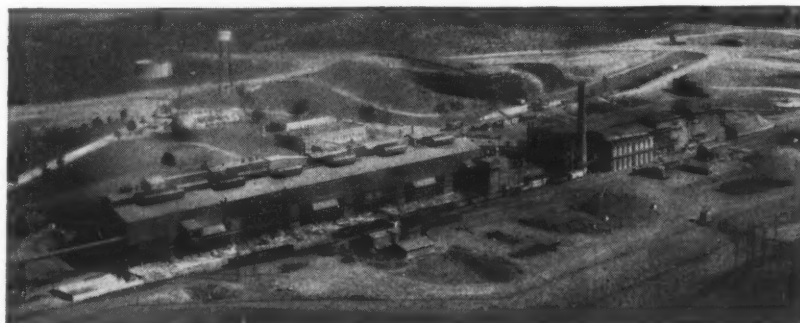
PHOSPHATE ROCK on Monsanto properties in Idaho will be strip-mined. Veins are as much as 100 feet thick.

Monsanto, already the world's largest producer of elemental phosphorus, has added extensive holdings of phosphate rock near Soda Springs, Idaho. To extract elemental phosphorus of better than 99.9% purity from this rock, Monsanto is constructing a large electric furnace plant at Soda Springs, Idaho.

The output of this furnace plant, available next year, will substantially increase Monsanto's production of elemental phosphorus. It will mean more phosphoric

acid and its derivatives for myriad industries using such products.

Elemental phosphorus from the Soda Springs furnace plant will travel by rail to Monsanto plants in Monsanto, Illinois; St. Louis, Missouri; Trenton, Michigan; and Anniston, Alabama; where it is converted into pure phosphoric acid and numerous phosphates serving hundreds of industries. Expansion of manufacturing facilities at these processing plants is under way.



SINCE 1937, Monsanto has been producing elemental phosphorus at its Monsanto, Tennessee, plant and today there are six large electric furnaces in the Monsanto, Tennessee, installation shown at the left. Monsanto originated the present-day method of large-volume elemental phosphorus production and was the first to ship the element in tank-car quantities.

Phosphorus Production

**MORE PHOSPHORUS = MORE PHOSPHORIC ACID
MORE PHOSPHATES
MORE PHOSPHORUS DERIVATIVES**

Phosphorus Pentoxide

Phosphorus burned in dry air produces phosphorus pentoxide from which these products are derived:

Methyl Phosphoric Acid
Ethyl Phosphoric Acid
Propyl Phosphoric Acid
Butyl Phosphoric Acid
Amyl Phosphoric Acid



PHOSPHORIC ACID

Phosphorus burned in moist atmosphere produces phosphoric acid used in various industries and from which sodium phosphates, calcium phosphates, ammonium phosphates, potassium phosphates and numerous other phosphates are derived.

Phosphorus Trichloride

Phosphorus plus chlorine produces phosphorus trichloride from which the following are derived:

Triethyl Phosphite
Phosphorus Oxichloride
Triethyl Phosphate
Tributyl Phosphate
Triocetyl Phosphate
Tricresyl Phosphate
Triphenyl Phosphate

SODIUM PHOSPHATES	CALCIUM PHOSPHATES	PHOSPHORIC ACID	AMMONIUM PHOSPHATES	POTASSIUM PHOSPHATES	OTHER PHOSPHATES
Mono Sodium Phosphate Uses: Acid Cleaners Water treatment Textiles	Mono Calcium Phosphate Uses: Baking powder Self-rising flour Self-rising corn meal Prepared flour Food enrichment	Uses: Soft drinks Rustproofing Metal cleaning Gelatin	Mono Ammonium Phosphate Uses: Flameproofing Yeast Malt Plant nutrient Acid cleaners	Mono Potassium Phosphate Uses: Pharmaceutical Plant nutrient	Iron Phosphates Magnesium Phosphates Aluminum Phosphates Barium Phosphates Beryllium Phosphates Copper Phosphates Lead Phosphates Lithium Phosphates Silver Phosphates Zinc Phosphates
Di Sodium Phosphate Uses: Cheese Leather Textiles Detergents Water treatment Dye Pigments	Di Calcium Phosphate Uses: Tooth paste Tooth powder Food enrichment Pharmaceutical	Metal cleaning Jelly and preserves Silage treatment Fertilizer Textiles Sugar Pharmaceutical Water treatment	Di Ammonium Phosphate Uses: Flameproofing Yeast Plant nutrient Ammoniated dentifrices	Di Potassium Phosphate Uses: Fermentation Pharmaceutical Nutrient solutions	
Tri Sodium Phosphate Uses: Water softening Detergent Metal cleaning Water treatment Textiles	Tri Calcium Phosphate Uses: Tooth paste Tooth powder Anticaking agent Food enrichment Pharmaceutical			Tri Potassium Phosphate Uses: Oil refining	
Tetra Sodium Pyrophosphate Uses: Soap Textiles Detergents Clay dispersant Dyeing Bleaching Pitch control Metal cleaning Oil well drilling Water treatment Water softening Glass	Tetra Calcium Pyrophosphate Uses: Food enrichment Pharmaceutical			Tetra Potassium Pyrophosphate Uses: Soap Textiles Water softener Synthetic rubber manufacture	

Sodium Polyphosphate

Uses:
Oil well drilling
Textiles
Water treatment
Detergents

Sodium Tripoly Phosphate

Uses:
Detergents
Pitch control
Metal cleaners
Water treatment
Clay dispersant

MONSANTO
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SERVING INDUSTRY . . . WHICH SERVES MANKIND

FOR INFORMATION on Monsanto's chemically pure phosphoric acid and phosphates, contact the nearest Monsanto Sales Office or write MONSANTO CHEMICAL COMPANY, Phosphate Division, 1700 South Second Street, St. Louis 4, Missouri.

★ ★ ★

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MATERIALS

times at successively lower temperatures, and durometer hardness is determined as function of temperature. To determine changes due to plasticizer-time effects or crystallization, the specimen is conditioned at constant temperature, and hardness is plotted as function of time.

Although simple, the test has some drawbacks. Results are expressed in purely arbitrary units. Furthermore, specimens tested at low temperatures frequently display "drift" so that the instantaneous reading is followed by a drop in hardness. Rate and magnitude of the decrease vary with composition, but are often substantial. In spite of these limitations, hardness tests are useful in the hands of experienced rubber technologists for comparing different compositions.

The ASTM D 797 stiffness test employs a simple, bar shaped, beam specimen. The specimen is supported at each end and loaded centrally. Measurement of beam deflection under known load makes it possible to calculate Young's modulus in flexure. As with other types of stiffness tests, it is possible to measure changes due to simple temperature effects, second order transitions, crystallization and plasticizer-time effects.

Readings from this test are readily calculated to a form readily understood by engineers—psi. However, since modulus data for elastomeric compositions can only be obtained at low deflections, it is hard to determine what will happen to the composition in actual service where deflections may be much different.

The ASTM D 1053 test is relatively new and is not as yet widely used by the rubber industry. The apparatus used measures the degree to which a specimen twists under the action of a definite torque applied through a torsion wire. By measuring twist at room temperature as well as at low temperatures, values for relative stiffness can be obtained.

(Summarized from information furnished by E. I. du Pont de Nemours & Co. (Inc.), Rubber Chemicals Division, Dept. CP, Wilmington 98, Del.)

Fine fibers improve insulation for refrigerated equipment . . .

new "500" series Fiberglas insulation replaces members in former "600" series

Uses: Insulation for refrigerated equipment. Replaces important members in maker's "600" series insulation.

Features: New "500" series has smaller fiber size. Outstanding characteristics are uniformity, smoothness, added resilience, and improved thermal properties.

Description: Following table compares the K factors of the new "500" series with those of the former "600" series, at 75°F mean temperature:

Fiberglas Insulation	K Factor
PF-511 (2 lb/cf)	0.250
PF-611 (2 lb/cf)	0.260
PF-512 (2½ lb/cf)	0.240
PF-612 (2½ lb/cf)	0.250
PF-513 (3-¾ lb/cf)	0.225
PF-613 (3¼ lb/cf)	0.240

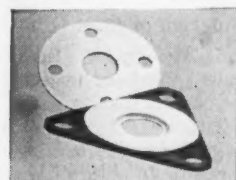
Members of the "600" series used primarily for sound deadening and load bearing remaining in the line are: 614, 615, and 617.

Source: Building Materials Division of the Armstrong Cork Company, Dept. CP, Lancaster, Pa. . . or for more information check CP 6368 on handy form, pages 2 and 3.

When inquiring check CP 6367 on handy form, pgs. 2-3

Du Pont plastic offers big savings in process equipment

Du Pont "Teflon" tetrafluoroethylene resin inert to almost all chemicals, serves up to 500°F., has unique non-adhesive properties.



Uses: Gaskets, packing (for pumps, valves, pistons, agitators), valve seats, non-adhesive surfaces for use with sticky materials, electrical insulation.

Features: Unexcelled chemical inertness, heat-resistance up to 500°F., low coefficient of friction, zero water-absorption. Used in

process equipment "Teflon" saves money through less maintenance, less replacement cost, increased productive capacity (through less down time), reduced wear on pistons and shafts, and simplified design; permits improvement in quality of product by eliminating contamination. Has outstanding electrical properties; unique non-adhesive characteristics for use with sticky materials.

Description: Du Pont supplies "Teflon" as molding powder, tape, and aqueous dispersions.

Demand for "Teflon" currently exceeds supply. However, we suggest you investigate its versatile properties for future application. We'll gladly discuss the availability of quantities for development work, and supply names of molders and fabricators of sheets, rods, tubes, or finished parts. For further information and booklet "Teflon in Gaskets and Packing," write:

Source: E. I. du Pont de Nemours & Co. (Inc.), Polychemicals Dept., Wilmington 98, Delaware.

*REG. U. S. PAT. OFF.



BETTER THINGS FOR BETTER LIVING
... THROUGH CHEMISTRY

When inquiring check CP 6369 on handy form, pgs. 2-3

LITHIUM

has arrived...

Metalloy Supplies Lithium In These Forms:

LITHIUM METAL

Cup 1/5 lb.
Shot 4-8 mesh
Extruded Rod .. 1/2" & 3/8" Dia.
Wire 1/8" Dia.
Ribbon 1/4"
Cartridge (Encased in Copper
Tubing) 2.25, 4.50, 9.0
& 108.0 Gram

LITHIUM HYDRIDE

Fine Ground
Supplied experimentally or
commercially . . .

LITHIUM

• Aluminate • Cobaltite •
Manganite • Silicate • Ti-
tinate • Zirconate • Zircon-
ium Silicate

**and METALLOY
is BASIC to this
FAST-
GROWING
INDUSTRY!**

LET Metalloy
and Lithium go
to work for you
today.

WRITE Dept. CP
for Data Sheets
on any products
listed. No obli-
gation.

IF IT'S LITHIUM — IT'S METALLOY



METALLOY CORP., Division
Rand Tower
Minneapolis 2, Minnesota

When inquiring check CP 6370 on handy form pgs. 2-3

Materials

Fabric Coatings, Moldings and Extrusions of Silicone Rubber Sponged by 3 Methods

Material is blown at 300 to 480°F with or without a blowing agent and produces a uniform sponge about twice the initial volume

OFFERING the superior characteristics of silicone rubber toward heat and aging, this material has a wide range of potential uses. It is available in nearly all of the forms of natural or other synthetic rubbers. In order to fabricate it in a sponged form, the normal production methods are somewhat modified. Methods have been developed for producing it as a sponged fabric coating, or as moldings or extrusions.

Three basic methods for producing a blown Silastic sponge are used. First method makes use of the normal evolution of gases during initial vulcanization. Two types, Silastic 110 and 126, are designed so that they can be used this way in many instances. A second sponging method makes use of a blowing agent in addition to the gas formation within the product. Many common blowing agents can be used, but Unicel ND (1% by weight) is recommended. Agents should be used even with the self-blowing types in certain applications such as coatings less than 1/8" in thickness where the gases have a tendency to escape. The third method uses water absorbed in steam vulcanization to supplement the normal gas formation. At present this third method can only be used in making extrusions with type 250.

Properly produced, the sponged article has a dense skin which may be either smooth or grained; cellular structure is continuous and uniform throughout the cross-section; and, the finished volume is approximately double that of the material used. Sponge can be made more dense by cutting down on the amount of blowing agent used. Blowing temperatures range from 300 to 480°F depending on the size and shape of the part, type used, type sponge required, and methods involved.

A typical method of producing a sponged extrusion from type 160 is to extrude the part within a few hours after milling. This type may be used with or without a blowing agent. The extrusion is blown by heating in an air circulating oven at 300 to 480°F, depending on thickness or the part and density required. Final curing is completed at 480°F. If a softer sponge is required, the extrusion can be exposed to 50 psi steam in a vulcanizer for 5 minutes before heating at 300 to 480°F.

In another typical instance, preparing sponged moldings from type 250, the material is worked on a 2-roll mill at temperatures below 130°F until a continuous smooth sheet is formed on the rolls. Crumbs that fall during the milling

are either returned immediately or saved for addition to the next batch. Unicel ND is added to 0.7% based on the weight of the compounded material and dispersed thoroughly by milling. Sheet is then removed from the mill and placed between two metal plates separated by a frame or shims to the desired thickness. It is removed after 3 minutes at 300°F and normal molding pressure.

If the sheet is less than 1/4" thick it can be placed directly in an oven at 480°F. If 1/4" thick it goes directly into an air circulating oven at 390°F for 2 hours. If more than 3/8" thick, the sheet should be heated in an oven at 300°F for a short time before heating at 390°F for 2 hours. After 2 hours at 390°F the sheet should be given a final cure at 480°F for 24 hours.

(Condensed from Silastic Notes 8a, Dow Corning Corporation, Dept. CP, Midland, Mich. . . or for more information check CP 6373 on handy form, pages 2 and 3.)

**Small amounts of preservative
protect glue, adhesive, leather
from bacteria, fungi . . .**

non-toxic, stable material can be applied as spray for mold control on plant walls, equipment

Uses: Finding extensive application in preservation of glues and adhesives, casein solutions, starch (dry and in solution), egg albumin solutions, gelatin solutions, alginate and algin solutions and cosmetic preparations. Also protects tanned leather and untanned skins from damage due to fungal or bacterial attack. Material is now being used as a spray for mold control on floors, walls and equipment in tanneries, glue factories, box cars, warehouses.

Features: Low concentrations inhibit growth of both bacteria and fungi; higher concentrations will kill them. Since product is non-volatile and highly stable, its concentration in a substance remains constant. A long-range toxicity study is now under way to satisfy FDA requirements. Results to date, at the half-way point, indicate that the material is completely safe. It is neither a primary irritant nor a skin sensitizer.

Description: Vancide 51 is one of a series of Vancides made by this manufacturer for use against bacteria and fungi. It is composed of sodium salts of dimethyl

CHEMICAL PROCESSING

dithiocarbamic acid and 2-mercaptobenzothiazole. Assay is 30%. Supplied in form of yellow-green liquid, having a slight amine odor, and soluble in water, low-molecular-weight ketones, alcohols and esters.

Against a mixed culture of *Metarrhizium glutinosum*, *Penicillium* species, *Trichoderma* species and *Chaetomium globosum*, retarding concentration (by weight) is 0.33%, and lethal concentration 1.0%. These figures, against *Aspergillus niger*, are 0.002 and 0.005%.

Lowest inhibiting concentration against the bacteria *Escherichia coli* and *Salmonella typhosa* has been found to be 0.1% by weight. It is 0.01% or lower in the case of *Staphylococcus aureus* and *Bacillus subtilis*.

Since dilute solutions of decomposable materials are in general more easily attacked by bacteria and fungi, more preservative is needed in them. A concentration of 1.0% based on dry weight of material to be protected should be used with dilute solutions containing less than 10% of decomposable material. Solutions of higher concentration can be protected by use of 0.25 to 0.50%.

Vancide 51 should be added to hot glue stock after it has left the evaporators and before it is dried. It can be diluted with water before adding. The preservative has been used successfully in conjunction with zinc sulfate in glues. Amounts of zinc sulfate have varied from 0.5 to 2.0% of the weight of the glue.

Source: The Vancides are offered by Specialties Department, R. T. Vanderbilt Co., Dept. CP, 230 Park Ave., New York 17, N. Y. . . or for more information check CP 6372 on handy form, pages 2 and 3.

Dip protects wood from dry rot . . .

copper naphthenate treatment is painted over after 24-hr dry

Uses: Dip for wood to be exposed to water-immersion. Gives primary protection against dry rot.

Features: Preservative treatment is of a non-crystallizing nature. Can be painted over after 24-hr dry.

Description: Fungus-Ban Copper Naphthenate Dip for Wood meets Federal Specifications MIL-W-906 Type I or Class A. It supplements other products offered by manufacturer for use in the wood preservative field.

Source: The Wilbur & Williams Company, Dept. CP, 130 Lincoln St., Boston 35, Mass. . . or for more information check CP 6373 on handy form, pages 2 and 3.

Presents properties and uses of resin varnish

Bulletin gives recent information on modified phenolic resin varnish finding use in impregnation of printed base stocks in decorative laminates where use of an overlay sheet (such as in woodgrains and solid colors) is not required. Clarity and freedom from crazing make material useful in surfacing of hardboards, asbestos boards, and plywood.

New technique is reported which makes possible its unrestricted use for standard grades of decorative laminates in all shades and patterns, as well as meeting NEPA standards. Of two grades available, one possesses high viscosity, slow penetrating properties; other, slow penetrating characteristics. Possible 20% reduction in material cost through use of these resins is stated. Synco 418 Announcement is issued by Snyder Chemical Corp., Dept. CP, Bethel, Conn. When inquiring specify CP 6374 on handy form, pages 2 and 3.

SEPTEMBER 1951



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- * DiIsoOctyl Adipate PX-208
- * DiButyl Sebacate PX-404
- * DiIsoOctyl Sebacate PX-408
- * TetraHydroFurfuryl Oleate PX-658
- * TriCresyl Phosphate PX-917

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When inquiring check CP 6375 on handy form, pgs. 2-3

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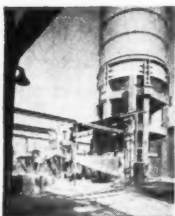
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DIETHYLENE GLYCOL
ETHYLENE DICHLORIDE
ETHYLENE GLYCOL

When inquiring check CP 6376 on handy form, pgs. 2-3

Briefs

From recent literature

Heat for the machineless waving of hair is usually generated by bringing aqueous ethylene glycol into contact with potassium permanganate. It has been found that a longer-lasting, more even heat is developed if a polyoxyethylene ether of glucose or a similar sugar is added to the glycol solution. These mixtures are, of course, adaptable to other uses requiring chemical heating.

Stable suspensions of polymeric chlorotrifluoroethylene suitable for use in coating wires are formed by grinding the polymer in a micro-pulvizer and then milling the finely divided polymer in a ball mill with a solution of a monohydric alcohol in ethylene glycol. Uniform, flexible coatings having good electrical resistance are formed on wire by passing the wire through the suspension and then baking.

Water-soluble modifications of prolamins (particularly zein) are prepared by heating the prolamin with ethylene glycol in the presence of a strong base. The modified prolamin is useful in the preparation of inks, water dilutable paints, and molding compositions.

Polymeric esters of cyclohexadiene dicarboxylic acids and ethylene glycol are oils exhibiting the air oxidation—hardening properties of drying oils (e.g. linseed oil). The polymers are thermosetting and form hard coatings when heated to about 150°C. The hardening properties of the polymers are explained as being due to the variety of cross-linkages which may be formed under various conditions.

These developments are abstracted from recent publications or U. S. patents. They may suggest other applications of Jefferson Ethylene Glycol in your products or processes.

MATERIALS

Outlines silicon carbide refractory materials

Bulletin details properties of silicon carbide as refractory material under thermal conductivity, thermal shock resistance, heat storage and structural strength headings. Four special refractory materials using silicon carbide as a constituent are outlined along with applications. Also mentioned are an aluminum oxide neutral refractory and a fused magnesium oxide basic refractory material. Supplemental Bulletin K-405 is issued by Electro Refractories & Abrasives Corporation, Dept. CP, 344 Delaware Ave., Buffalo 2, N. Y. When inquiring specify CP 6377 on handy form, pages 2 and 3.

Electrical conductors, insulators can now be cast...

mortar made from liquid resin and powder hardens to form fungus- and chemical-resistant form

Uses: Conductoplast is a resin cement that can be cast into conductors of various shapes and sizes for electrical current. Insulplast resists flow of electrical current.

Features: Both materials are resistant to fungus growth and to most non-oxidizing acids, salts, oils, greases and solvents. Conductoplast is resistant to all alkalis. Adhesion to ceramic and other materials is described as excellent.

Description: Both mortars are made in a similar manner, by mixing a powder with liquid resin. Hardening time varies indirectly with temperature. For example, Conductoplast mortar will harden in about 6 hr at 90°F, but 48 hr at 60°F. The following table presents typical properties of Conductoplast and Insulplast. Ratio of powder to liquid resin was 2:1 in the case of Conductoplast, and 9:4 in the case of Insulplast.

	Conductoplast	Insulplast
Tensile strength, psi	1500	1100
Compressive strength, psi	12,000	11,000
Modulus of rupture, psi	1500	1200
Adhesion to wire-cut brick, psi	750	700
Max limit of dim. stability, °F	380	375
Coeff. of expansion, x 10 ⁻⁶	6	6
Density, lb/cu ft	90	120
Water absorption, %	0.4	0.7
Conductivity, ohm-cm	12	—

Source: Products of The Atlas Mineral Products Company, Dept. CP, Mertztown, Pa. ... or for more information check CP 6378 on handy form, pages 2 and 3.

Lists 24 flooring applications for silica compounded product

Eight-page, two-color bulletin emphasizes through use of 20 photographs the wide applicability of a floor-surfacing product containing silica, aluminum, iron and calcium oxides. Use involves only mixing with water. Characteristics listed are: skid-proof, spark-proof, fire-resistant and sound-deadening. Method of manufacture is detailed along with the three grades available for application in coats 1/8" to 1/2" thick. Points out exterior and interior serviceability as on railroad platforms, stair treads, loading docks, locker rooms, non-slip floors, spark-proof floors and entrance ways. "Plastic Rock" is issued by United Laboratories, Inc., Dept. CP, 16801 Euclid Ave., Cleveland 12, Ohio. When inquiring specify CP 6379 on handy form, pages 2 and 3.

CHEMICAL PROCESSING

MATERIALS

Tabletting machines preform molding compound . . .

phenolic material cures rapidly; preforms hold shape

Uses: Medium-high-impact type phenolic molding material suitable for automatic preforming on standard tabletting machines. Material can be compression, transfer or plunger molded.

Features: Has fast rate of cure. Preforms can be held to close tolerances.

Description: RX-429, a dustless black material, should be molded at 290-325°F and at a minimum pressure of 4000 psi. Molding shrinkage is 0.005-0.007 in/in.

Molded parts should not ordinarily be exposed continuously to temperatures above 300°F. Parts gain about 1% in weight after a 24-hr water immersion at room temperature. Dielectric strength (short time) is 250 v/mil.

Izod impact strength is 0.8 ft-lb/in of notch, compressive strength 22,000 psi, tensile strength (1/8" thick) 5500 psi, and flexural strength 8000 psi.

Source: Product of Rogers Corporation, Dept. CP, Manchester, Conn. . . . or for more information check CP 6380 on handy form, pages 2 and 3.

Protects against acids, alkalis, solvents . . .

resin coat cures at room temp, resists heat too

Uses: Coating protects concrete, metal and other surfaces against attack of strong non-oxidizing acids, alkalis, and solvents.

Features: Cures at room temperatures, yet reported to display excellent heat resistance.

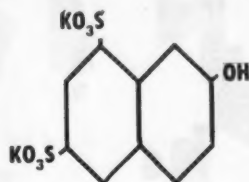
Description: Furane resin polymer—Resistojet—is applied by brush, spray or dip. Film forms by catalytic action. The furane polymer transforms into a hard, impervious, strongly adhering coating.

Source: Furane Plastics Inc., Dept. CP, 719 W. Broadway, Glendale 4, Calif. . . . or for more information check CP 6381 on handy form, pages 2 and 3.

For more information on product at right, specify CP 6382 . . . see information request blank between pages 2-3.



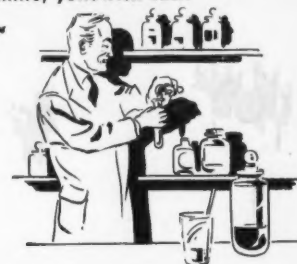
here's the GENERAL story on



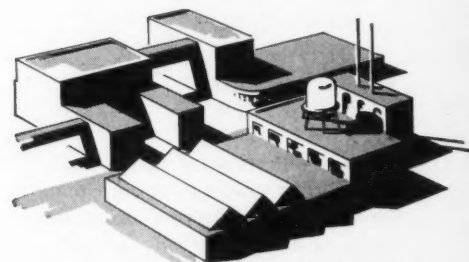
It is the dipotassium salt of 2-naphthol-6, 8-disulfonic acid



The name is derived from the German "Gelb"—used to make red colors with a definite, yellowish cast.



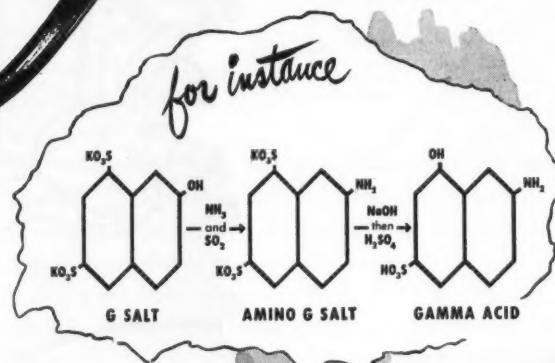
It is manufactured primarily as an intermediate in producing dyestuffs



It is a potential building block in the synthetic organic chemical industries—such as pharmaceuticals, paints, rubber, petroleum



It is now available in commercial quantities for many industrial uses



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Phenols	Phthalic Anhydride	Lutidines
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Cresylic Acids	ELASTEX* DCHP Plasticizer	Neutral Coal-tar Oils
Chlorinated Tar Acids	"ELASTEX" 10-P Plasticizer	Coal-tar Creosote
Xylenols	"ELASTEX" 50-B* Plasticizer	CUMAR* Paracoumarone-
Pickling Inhibitors	"ELASTEX" 28-P Plasticizer	Indene Resin
Benzol	Phenolic Resins	Carbonex* Rubber Compounding
Toluol	Niacin (Nicotinic Acid)	Hydrocarbon
Xylol	Pyridines	Bardol* Rubber Compounding
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When inquiring check CP 6383 on handy form, pgs. 2-3

MATERIALS

Hand-shaped plastic putty cures to tough or rigid piece when baked . . .

aids designer in making models, mock-ups and small pre-production pieces like article to be produced

Uses: Primarily intended as a material for use by industrial designers and model makers in preparing models, mock-ups and small-run pre-production pieces similar to the article desired for production.

Features: Readily fabricated, in the same manner as sculptor's clay, by hand working or, where precision parts are required, inexpensive compression molds may be employed. Baking cures the piece to a form that can vary from tough and thermoplastic to rigid and resilient. Such pieces can be actually tested in the finished assembly to determine usefulness or style.

Description: Closeal plastic putty is supplied in cakes of one and five pounds, and any desired amount may be removed by the fingers or by cutting with a knife. After forming, the shape is cured at 350 to 360°F for a length of time dependent on thickest section of the shape. Sections 1/2" thick require about 30 min. Parts not completely cured can be returned to the oven for an additional curing period. Normally, none of the fine detail is lost in baking.

Baked, cured Closeal ranges from a tough, thermoplastic material, having a Shore Durometer A hardness of about 50 and a heat distortion temperature of about 180°F, to a rigid, resilient material which is very hard at room temperature and still hard at 350°F. User should give some idea of the hardness desired when ordering.

Cured material resists most acids, alkalis and organic solvents. Closeals which are soft in the cured state are somewhat affected by ketones and aromatic hydrocarbons, but solvent attack is decreased in the more rigid cured material.

The soft putties have demonstrated shelf life of at least six months. Those which form rigid cured articles have lower shelf life and should not be stocked longer than four to six weeks.

Closeal is supplied in standard colors of white, red, yellow, blue, green, gray and black. Other colors can be made if desired.

Source: Developed by Clopay Corporation, Industrial Products Division, Dept. CP, Clopay Sq., Cincinnati 14, Ohio . . . or for more information check CP 6384 on handy form, pages 2 and 3.

Foreign sources of metallurgical literature and information

Ninety-five-page book is an aid to metallurgists, engineers, and others interested in obtaining ready access to information on metallurgy published in the foreign literature. Divided into nine sections, topics covered are: metallurgical associations, societies, institutions; metallurgical periodicals, transactions, proceedings; metallurgical abstract services; foreign standardizing organizations; statistical sources; directories of metallurgical industries; metallurgical books; metallurgical bibliographies, technical & special reports; and, metallurgical abbreviations. To obtain "Guide to Foreign Sources of Metallurgical Literature", remit \$2.50 direct to Richard Rimbach Associates, Dept. CP, 921 Ridge Ave., Pittsburgh 12, Pa. When inquiring specify CP 6385 on handy form, pages 2 and 3.

CHEMICAL PROCESSING

MATERIALS

Pilot plant is making diethyl succinate . . .

liquid serves as intermediate in synthesis of ring compounds

Uses: Chemical intermediate for synthesis of ring compounds.

Features: Available in pilot plant quantities.

Description: Diethyl succinate, as produced by this company, is a clear, mobile liquid, essentially colorless and assaying 99+%. It contains a maximum of 0.1% acidity (as succinic acid), weighs 8.7 lb/gal, and has a refractive index ($n_{25/D}$) of 1.417-8.

Material is insoluble in water, soluble in alcohol, ether and petroleum spirits. Boiling point (30 mm Hg) is 120°C, crystallizing point approximately -20°C.

Chemical reactions are covered in a six-page technical data sheet printed by manufacturer. These include the Stobbe condensation and modifications, and the Claisen type condensation.

Source: Product of Monsanto Chemical Company, Dept. CP, St. Louis 4, Mo. . . or for more information check CP 6386 on handy form, pages 2 and 3.

Deals with data on nickel cast irons

Illustrated, 28-page booklet presents many characteristics of nickel cast irons. Nickel, alone or with other alloying elements is described as improving specific properties of many ferrous alloys. Publication contains 27 tables, charts and photomicrographs.

An interesting feature of the nickel cast iron alloys is their ability to damp vibration. Even the poorest of the series of alloys is more than twice as effective as normalized steel in this capacity. This property has led to the use of these alloys in situations where vibration is a critical factor. Other comparisons suggest many other applications for nickel cast irons.

"Guide to the Selection of Engineering Irons" is issued by The International Nickel Company, Inc., Dept. CP, 67 Wall St., New York 5, N. Y. When inquiring specify CP 6387 on handy form, pages 2 and 3.

For more information on product at right, specify CP 6388 . . . see information request blank between pages 2-3.

HEYDEN

BENZYL CHLORIDE



Benzyl Chloride is an unusually versatile intermediate which is finding use in an increasing number of manufacturing processes. Whether your application is in pharmaceuticals, dyes, perfumes, quaternary ammonium compounds, resins or plasticizers, Heyden Benzyl Chloride will more than meet your requirements for quality and uniformity. It is produced in refined and technical grades, and is shipped in nickel drums or carboys.

Heyden's leadership in the chlorination of toluene and the production of chlorinated aromatics dates back more than a quarter of a century. Research chemists and production engineers will want to investigate the chloro derivatives of benzyl chloride in syntheses similar to those mentioned above. Typical of other interesting and useful Heyden chlorinated products are the chlorobenzoyl chlorides and the ortho-chloro derivatives of toluene, benzaldehyde, benzotrichloride and benzoic acid.

Write now for samples and further information.

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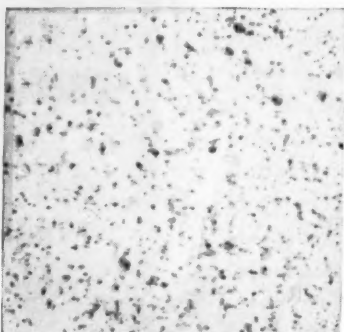
HERE'S PROOF OF THE COMPLETE EFFECTIVENESS OF MARASPERSE DISPERSANTS

Without Marasperse



These photomicrographs* show vividly how Marasperse disperses insoluble particles in water and overcomes their natural tendency to flocculate.

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(*Shown—Actual Photomicrographs of Carbon Black in Water—860 X)

This powerful dispersing action of Marasperse gives three important benefits.

1. The settling of insoluble particles in water suspension is prevented or greatly retarded.
2. The fluidity of slurries is markedly increased.
3. Slurries remain fluid even with greatly increased concentrations of solids.

If your process or the use of your products involves water suspensions of insoluble materials, investigate the use of Marasperse for increased process efficiency and superior product performance.

Marasperse is used in a wide variety of applications—in the dispersion of:

DYESTUFFS
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GYPSUM
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CEMENTS
RUBBER ANTIOXIDANTS
IN THE FORMULATION OF INDUSTRIAL CLEANERS

... and new uses are constantly being developed.



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Write for information on MARASPERSE products. You will receive complete and technical data. Our research staff will welcome the opportunity to cooperate with you.



When inquiring check CP 6389 on handy form, pgs. 2-3

MATERIALS

Porous materials sealed against water, stains by penetrating wax . . .

prevents metal surfaces from rusting, makes them easy to clean

Uses: For treating wood, concrete, terrazzo, marble, ceramic tile, linoleum (except print types), and cork areas such as floors, walls, etc. Also applicable to metal, but not recommended for rubber and asphalt compositions.

Features: Wax penetrates rapidly and deeply into wood and compositions to seal out water, moisture, grease, oils, stains, and dirt. After application, surfaces can be buffed to a lustre, are reported to give good traction, and can be painted over. Wax is specially treated to offer termite control.

Application to metals prevents rusting and makes areas resistant to staining and easy to clean.

Description: Nu Surfas waxes are a composition of oils and waxes blended to the consistency of water. When applied, the wax is carried in suspension by the oil and is deposited to the depth of penetration, where it expands by oxidation to fill the pores and coat the fibers of the material.

The Nu Surfas Pen-Trating Wax line includes: 1) #2 Prime for all surfaces, 2) #2 M which can be used clear or pigmented on surfaces, and 3) Cleaner for preparing surfaces for treatment.

It is difficult to give figures for coverage on porous surfaces, where it is customary to flush the wax and allow it to remain for maximum absorption. Coverage on metal, however, runs from 500 to 800 square feet per gallon for two coats.

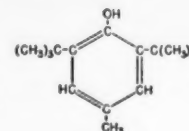
Source: Products of the Nu Surfas Corporation, Dept. CP, 7312 South Bennett Ave., Chicago 49, Ill. . . . or for more information check CP 6390 on handy form, pages 2 and 3.

Nitrosyl chloride reviewed

Representing a study of over 700 references and abstracts, 80-page book covers properties and reactions of nitrosyl chloride. Research workers and others interested in the compound will find work of great use. A copy may be obtained by request on letterhead to Product Development Dept., The Solvay Process Division, Allied Chemical & Dye Corporation, Dept. CP, Room 1001, 40 Rector St., New York 6, N.Y.

KOPPERS Di-tert-BUTYL-para-CRESOL ... AN EFFECTIVE ANTIOXIDANT

● Koppers 2,6-Di-tert-butyl-para-cresol (DBPC) is a crystalline tri-alkylated phenol, which is insoluble in water and in aqueous alkaline solutions. DBPC is a hindered phenol and behaves in many respects like a phenolic ether. It undergoes few of the reactions typical of unhindered phenols, such as phenol and the cresols.



DBPC is an effective antioxidant for hydrocarbon materials such as petroleum oils and greases, and for vegetable oils and fats. Its antioxidant properties indicate its value to the rubber, soap, petroleum, insecticide, and oil and fat industries.

Bulletin No. C-9-115 describes in detail the properties, reactions and uses of DBPC. A copy of this bulletin will be sent upon request.

Though supplies are at present limited by the emergency demand, many known possibilities of DBPC make it a most interesting chemical for further study in your laboratories.



KOPPERS COMPANY, INC.
Chemical Division, Dept. CP-9
Koppers Building, Pittsburgh 19, Pa.

When inquiring check CP 6391 on handy form, pgs. 2-3



**CONTROLLED
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makes

PICCOLYTE

The Versatile Resin

dependable

You are assured of dependable uniformity when you use PICCOLYTE, because of the rigid control of every step of manufacture. The photograph above shows the controls of the Polymerizer, the kettle in which resin is made from Pinene.

Manufacturing equipment is of the most modern design, and highly perfected instrumentation procedure permits operators to keep the material under constant observation during processing.

PICCOLYTE is a versatile resin, having properties that make it ideally suited for a wide variety of products. Write for bulletin giving complete details.

**PENNSYLVANIA
INDUSTRIAL CHEMICAL CORP.**
Clairton, Pennsylvania
... Plants at Clairton, Pa.;
West Elizabeth, Pa.;
and Chester, Pa.

Distributed by Pennsylvania Falk Chemical Co., Pittsburgh 30, Pa.
and Harwick Standard Chemical Co., Akron 5, Ohio

When inquiring check CP 6392 on handy form, pgs. 2-3

CHEMICAL PROCESSING

MATERIALS

Aqueous solutions of cleanser act like organic solvents as well as soaps . . .

over-sized molecule groups dissolve organics which would not usually yield to water

Uses: Tests have indicated usefulness in metal cleaning, types of in-process cleaning, maintenance cleaning and other applications where soaps, alkaline cleaners or emulsions fail.

Features: Action of the cleansers is based on over-sized groups of molecules which have the property of dissolving not only water soluble soils taken up by normal soap solutions but also water insoluble soils which are normally taken up only by organic solvents. The material has little saponifying power, however, and does not remove fatty soils by this mechanism.

Description: Four of these materials, called Solubilizing Cleaners, are in semi-commercial production and more are being developed. They are clear liquid, yellow, dark brown or cherry red in color. While only limited clinical tests have been run, results indicate a reduction of dermatitis hazard, due to defatting, over conventional material. Vapor toxicity is about the same as that for conventional materials. Other properties include: practically neutral pH, good solubility and dispersibility in water, moderately high flash point, and a high adsorption at interfaces.

Research has indicated that type SC-3 may be particularly useful as a hand cleaner. It has been effective on grime, paint, tar and printing ink. Another type has shown good possibilities in removing imbedded buffing compound in the designs in silver. Research is now focusing on food processing, laundry and dry cleaning.

More detailed information on the four types now in production is available from manufacturer.

Source: Development of Pennsylvania Salt Manufacturing Co., Dept. CP, 1000 Widener Building, Philadelphia 7, Pa. . . . or for more information check CP 6393 on handy form, pages 2 and 3.

Aluminum now welded without objectionable dark weld . . .

aluminum rod with silicon-free flux gives weld that closely matches physical properties of base metal

Uses: Flux-coated aluminum welding rod for oxy-acetylene and oxy-hydrogen welding of aluminum — especially pure aluminum (2S).

Features: Physical properties of the weld such as color and corrosion resistance are reported to closely match those of the base metal. Special silicon-free flux eliminates the objectionable dark weld that has generally resulted from former use of anodized silicon-bearing welding rods. In addition, the flux has a tendency to hold the metal and prevent it from 'running away' — particularly helpful when welding parts in position.

Description: Flux coating on EutecRod 22FC is low-melting for minimum heat application. Once melted, the flux flows in a transparent pool allowing the welder to watch the progress of his work. 22FC is made in 1/8 and 3/16" diameters.

Source: Development of Eutectic Welding Alloys Corporation, Dept. CP, 172nd St. & Northern Blvd., Flushing, New York, N. Y. . . . or for more information check CP 6394 on handy form, pages 2 and 3.

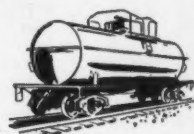
The **+** in Hooker Caustic Soda is *SERVICE*

When you buy a basic chemical like caustic soda, *service* is an important factor in determining your source of supply. As a basic producer, Hooker offers you these advantages:



1. Caustic soda of high purity, low in iron and sulfates . . .

and



2. Modern equipment for loading and shipping to maintain that purity from our plant to the user's plant . . .

+



An experienced technical service staff to help you use and handle caustic soda.

To you this means minimum processing costs through elimination of variations in quality from shipment to shipment. To make sure that Hooker Caustic reaches you as pure as it leaves us, we coat Hooker tank cars with a special protective lining. Each car is completely insulated and equipped with a heating device to make handling and unloading uniform the year around.

+ You can reduce processing costs further through the safe and efficient handling of caustic soda. This is where the specialized knowledge of our technical service staff can help you.

For analyses and specifications on Hooker Caustic Soda, write on your business letterhead for Technical Data Sheet No. 735.

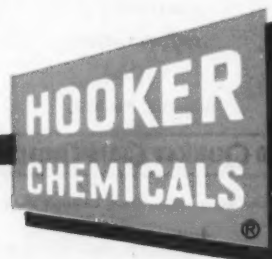
Hooker Caustic Soda is sold in solid, flake or liquid form. Liquid is supplied in 50% and 73% concentration.

From the Salt of the Earth

HOOKEE ELECTROCHEMICAL COMPANY

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10-1846

SODIUM SULFIDE • SODIUM SULFHYDRATE • SODIUM BENZOATE • CHLORINE • MURIATIC ACID • PARADICHLOROBENZENE • MONOCHLOROBENZENE

When inquiring check CP 6395 on handy form, pgs. 2-3

Industry selects THFA*



why?

Tetrahydrofurfuryl alcohol (THFA) has a growing appeal because it is readily produced in commercial quantities and offers a convenient starting point for the preparation of important new chemical products, such as dihydropyran, lysine, pentane diols, and glutaric acid. In addition, for some special uses such as ester type plasticizers, it contributes low temperature flexibility and yet has a high boiling point which minimizes volatility losses.

THFA is a primary alcohol, completely miscible with water, and has a mild pleasant odor. It is a powerful solvent for many materials. When using THFA as a solvent, saving of time in dissolving the solute and ready recovery of the THFA may more than offset its higher initial cost compared to cost of other solvents.

Typical Properties of THFA (pure)

Specific gravity (20/20°C.)	1.064
Boiling point °C. (743 mm.)	177.5
Refractive index (n 20/D)	1.4505
Surface tension 25°C. (dynes/cm.)	36.5 ± 0.5
Flash point (open cup) °C	75 — 80

Now is the time to become better acquainted with THFA. Write for further information—Technical Bulletin 87-B.

*Reg. U.S. Pat. Off.

The Quaker Oats Company **CHEMICALS DEPT.**

336A The Merchandise Mart, Chicago 54, Illinois

Eastern Sales Office
Room 536A 120 Wall St., New York 5, N. Y.

In San Francisco, The Griffin Chemical Company • In Australia, Swift & Company, Pty. Ltd., Sydney • In Europe, Quaker Oats-Graanproducten N. V., Rotterdam, The Netherlands; Quaker Oats (France) S. A. 42, Rue Pasquier, Paris 8E, France • In Japan, F. Kanematsu & Company, Ltd., Tokyo

When inquiring check CP 6396 on handy form, pgs. 2-3

MATERIALS

Charts properties, test methods on anhydrides

Sixteen-page booklet details acetic, propionic, butyric, "carbic", and tetrahydrophthalic anhydrides. Table of physical properties covers ten characteristics, including specific gravity, vapor pressure, freezing point and heat of vaporization. Shipping data table shows items, such as coefficients of expansion and net weight contents of anhydrides using different shipping containers: jugs, drums, carboys and steel drums.

Two-and-a-half pages cover formulas and uses of each of anhydrides in chemical and pharmaceutical manufacturing. Mentions use of propionic anhydride in preparation of testosterone propionate for hormone therapy, and butyric anhydride as potential raw material in production of cellulose butyrate or cellulose acetate-butyrate. Physical property charts give vapor pressure, specific gravity, liquid density, and surface tension curves as determined on pure materials.

Featured is a section describing specification limits of the anhydrides and corresponding quality control tests used in determination of limits. Total acidity, specific gravity, color, melting point and determinations of chlorides, aluminum, phosphates and nitrates are some of procedures given. Bibliography lists important references to anhydrides in chemical literature.

Booklet F-5280A is issued by Carbide and Chemicals Div., Union Carbide and Carbon Corporation, Dept. CP, 30 East 42nd St., New York 17, N. Y. When inquiring specify CP 6397 on handy form, pages 2 and 3.

Silica aquasol finds uses in waxes, water-based finishes, textiles, latex, etc. . . .

lends non-skid feature to waxes; decreases tack in water-based finishes; improves textile fiber strength

Uses: Colloidal solution of hydrated silica in water for emulsion type waxes, water-based finishes, textiles, latex, etc.

Features: Lends excellent skid resistance and high gloss to aqueous waxes, without the usual attendant softening of the wax film. Decreases tack and controls gloss in water based finishes; prevents blocking when used as a topcoat for unlacquered cellophane.

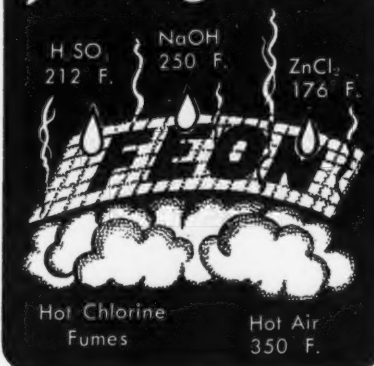
In manufacture of textile yarns, improves the strength, fiber parallization, and uniformity of fiber dispersion in blends by modifying the fiber-to-fiber friction during the drafting operation. Paper and film-like materials can be modified for the purpose of improving wettability, absorption, and other surface characteristics.

Can also be used for improving the bond strength of rubber adhesives, and for increasing modulus of latex films and latex threads. Water based laminating resins can be surface hardened. Will aid suspension of pigments in aqueous systems, such as water based paints and pulp colors. Effective mold lubricant for cast rubber, etc.

Description: Basic silica micelle of Syton C-30 (30% silica by weight) possesses a weak negative charge. This, coupled with the large surface area of the unit particle and the reactive nature of the surface, accounts for the binding effect Syton exhibits in certain systems. Spherical shape of the unit colloidal particle accounts for the low viscosities of the relatively concentrated solutions and for the properties it imparts to paper and other materials when applied to the surface or incorporated within the product.

Friction of surfaces is increased by deposits of the silica

*When the HEAT
is on your
Filter Cloth...*



The same FEON synthetic fabrics that are chosen for chemical resistance, high strength, and general over-all economy at normal temperatures can also handle the hot jobs—up to three or four hundred degrees fahrenheit, in many cases.

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FEON synthetic filter fabrics are available as yard goods, or tailored to fit any filter. Send us the facts on your job today. We'll be glad to make recommendations and quote prices.

31-D



FILTRATION FABRICS DIVISION
FILTRATION ENGINEERS, Inc.
155 Oraton Street • Newark 4, N. J.

When inquiring check CP 6398
on handy form, pgs. 2-3

CHEMICAL PROCESSING

MATERIALS

in a dry form. Syton in its dry form raises the heat distortion point of many systems, providing increased heat resistance in rubber, for example.

By decreasing pH below 6, Syton is compatible over wide ranges with water-miscible organic solvents such as ethyl alcohol, acetone, etc. It is also miscible with water soluble acids, ammonia, and most amines. In general, it is compatible with organic solutions or emulsions of melamine, urea, or phenolic resins, and polyvinyl alcohol, glue, starch, etc.

Salts such as sodium chloride and sulfate tend to gel the silica, rate depending on amount of electrolyte used. Increasing the electrolyte content by the addition of salts which do not hydrolyze decreases the stability of the sol. Cationic materials immediately precipitate Syton.

Physical properties and chemical composition are tabulated below:

Silicon Dioxide (solids)	30 ± 0.4%
Sulfates (as sodium)	Trace
Sodium Chloride	Less than 0.02%
pH	9.8 ± 0.2
Color	Milky White
Specific Gravity, 25°C	1.198-1.205
Viscosity, 25°C, Centipoise	13
Freezing Point	32°F
Average Particle Size	135 Millimicrons
Mean Particle Size	65 Millimicrons

Source: Samples of Syton C-30 may be obtained from maker, Monsanto Chemical Company, Merrimac Division, Dept. CP, Boston 49, Mass. . . or for more information check CP 6399 on handy form, pages 2 and 3.

Dimethoxy tetraethylene glycol available in single drum lots, larger batches by late 1951

colorless, high boiling ether a suitable reaction medium for Grignard, sodium condensation reactions

Uses: Because of diverse functional groups, material is good solvent, with the ether linkage tending to dissolve organic substances and the alcohol groups increasing the solubility in water. Possesses selectivity in use as solvent and has been used to purify such gases as acetylene and sulfur dioxide. Successful application has been as an additive to hydrocarbon diesel fuel to reduce the auto-ignition temperature of the fuel for cold starts.

Features: Contains no active hydrogen atom, hence a recommended use as a reaction medium for Grignard and sodium reactions. Property of miscibility with both water and organic solvents such as benzene, toluene, ethanol and diethyl ether suggests wide applicability, since solvent action is alterable by correct dilution with water or hydrocarbons.

Description: Dimethyl tetraethylene glycol is colorless and with a mol wt of 222.28 and sp gr at 20/20°C of 1.0132. Specifications of available material are boiling range at 90 mm Hg of 200-205°C and acidity, per cent by weight as acetic acid, of 0.02 per cent. If distillation reactions are to be carried out, solvent should be tested and any peroxides destroyed. Specific peroxide inhibitors are added on request. Research samples are available on written request to Product Research Department.

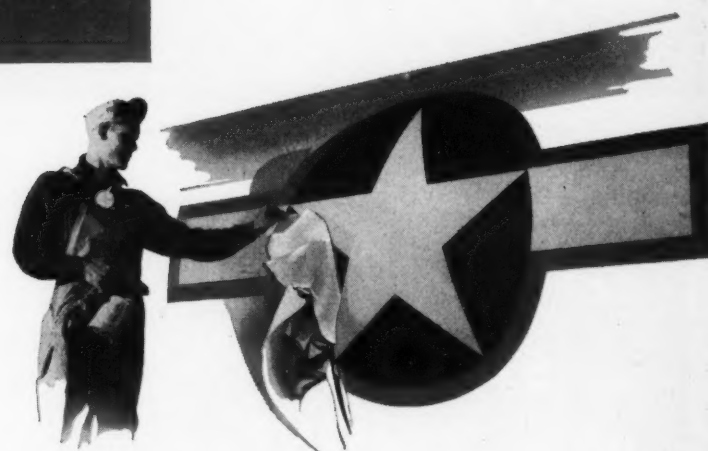
Source: Ansul Chemical Co., Dept. CP, Marinette, Wis. . . or for more information check CP 6400 on handy form, pages 2 and 3.

SEPTEMBER, 1951

GLYCERINE



**IMPORTANT
FOR
PROTECTIVE
COATINGS...**



...IMPERATIVE FOR NATIONAL DEFENSE!

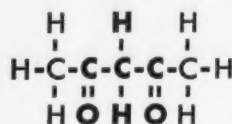
Protection? Or decoration? It doesn't matter what the purpose of a finish is—if it relies on a Glycerine-derived alkyd resin or ester gum, you're sure its work will be "Well Done!"

Thanks to Glycerine and its derivatives, coatings can be made tough, corrosion-resistant, flexible. Paints last longer . . . retain color more efficiently. New uses for Glycerine are constantly being developed! Glycerine is vital to our defense program, too. With consumption higher than ever before, you may find supplies temporarily tight. Remember why: Besides its many civilian uses, Glycerine is applying its tremendous range of properties to vital military jobs nowadays!

GLYCERINE PRODUCERS' ASSOCIATION
295 Madison Ave., New York 17, N. Y.

When inquiring check CP 6401 on handy form, pgs. 2-3

USE THIS MOLECULE



TO SYNTHESIZE NEW PRODUCTS

PENTANEDIONE-2,4 is now used in making

- Pharmaceuticals
- Metallo-organic Salts
- Dyestuffs
- Specialty Chemicals

Pentanedione-2,4 can be alkylated by condensation with aldehydes or by forming the sodium salt followed by reaction with alkyl halides. The two ketone groups can be reacted with amines. For example, reaction with guanidine yields 2-amino-4,6-dimethyl pyrimidine, an important intermediate for making sulfamethazine. Pentanedione-2,4 also forms metallo-organic chelates with many metals. These highly colored, oil-soluble materials are of interest as coloring agents, combustion catalysts, and for the purification of rare metals.

AVAILABILITY:

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A Division of
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In Canada: Carbide and Carbon Chemicals, Limited, Toronto

When inquiring check CP 6402 on handy form. pgs. 2-3

stabilizer B 30
for STABILIZATION of
IRON PIGMENTS in
POLYVINYL CHLORIDE

- heat and light
 - not toxic
- Attractively priced.



GENERAL MAGNESITE & MAGNESIA CO.

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Plymouth Meeting, Pa.

When inquiring check CP 6403 on handy form, pgs. 2-3

MATERIALS

Usage of antioxidant for rubber

Two technical bulletins describe a non-coloring, non-staining antioxidant for rubber. One (Bul WS-100-3) covers the uses in GR-S rubber compounds and the other (Bul WS-100-4) details incorporation of material in shoe sole compounds. Issued by Chemical Div., The Goodyear Tire & Rubber Co., Dept. CP, Akron, Ohio. When inquiring specify CP 6404 on handy form, pages 2 and 3.

For pyridine compounds, good starting material is 2-aminopyridine . . .

facilitates introduction of other groups to pyridine ring

Uses: Starting material for the preparation of pyridine compounds.

Features: Good reactivity is due to the presence of the amino group which facilitates introduction of other groups into the pyridine ring.

Description: 2-Aminopyridine is best described by the reactions it undergoes:

Treatment with sodamide or sodium hydride replaces one of the amino hydrogen groups with sodium, and the sodio compound reacts with halides to form either 2-substituted amino pyridines or N-substituted 2-pyridone imines. Chloroacetic acid reacts to form 2-pyridonimine-N-acetic acid. This latter reaction is general and has been applied to the preparation of many pharmacologically active compounds.

Heating with its hydrochloride yields di-2-pyridylamine. Aldehydes generally condense with two molecules of 2-aminopyridine with the elimination of water. Benzaldehyde in the presence of formic acid gives 2-benzylaminopyridine.

Nitration proceeds readily with concentrated nitric acid in concentrated sulfuric acid at 0° to give 2-nitraminopyridine, which may be isomerized to 3- and 5-nitro-2-aminopyridines by heating to about 50°. The amino-nitro compounds are reduced to the diaminopyridines by treatment with zinc and hydrochloric acid.

Chlorination goes easily in alcohol solution to yield 5-chloro-2-aminopyridine and 3,5-dichloro-2-aminopyridine. Bromination and iodination are accomplished equally easily.

2-Bromopyridine is prepared by the treatment of 2-aminopyridine hydrobromide perbromide with sodium nitrate. 2-Chloropyridine is best ob-

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Protective Coatings

You'll find good reason for the success of Ucilon Coatings in processing plants. Systems include unusually tough vinyl, phenolic, chlorinated rubber or fish-oil base materials. Even constant contact with acids, alkalies, salts, oils, greases, oxidants, moisture and other corrosives can be handled by the suitable system of Ucilon Coatings.



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In Canada: United Chromium Limited, Toronto, Ont.

When inquiring check CP 6405 on handy form, pgs. 2-3

FREE Guide Tells How to Remove Scale and Rust



Yours for the asking — this 28-page booklet explains how to remove lime scale and rust — without dismantling — such equipment as:

Heat Exchangers
Condensers • Compressors
Transformers • Filters
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SPECIALIZED INDUSTRIAL CLEANING
OAKITE
MATERIALS • METHODS • SERVICE

Technical Service Representatives in Principal Cities of U. S. & Canada

When inquiring check CP 6406 on handy form, pgs. 2-3

CHEMICAL PROCESSING

MATERIALS

tained by starting with 2-aminopyridine, but it is preferable to go through 2-pyridone as an intermediate.

Diazotization in dilute sulfuric acid yields 2-pyridone. Treatment of the sodium salt of 2-pyridone with carbon dioxide under pressure at 180-200° produces 6-hydroxynicotinic acid.

Oxidation with 30% hydrogen peroxide gives 2-nitropyridine in good yield. Sulfonation with 20% fuming sulfuric acid gives 5-sulfo-2-aminopyridine. Reaction with malonic ester yields a bicyclic product.

Source: Data sheet with extensive bibliography on behavior of 2-aminopyridine is available from maker, Reilly Tar & Chemical Corporation, Dept. CP, 11 S. Meridian St., Indianapolis 4, Ind. . . . or for more information check CP 6407 on handy form, pages 2 and 3.

Better paint bond to metal that has been cleaned, phosphate-coated . . .

paint-preparatory wash prevents rusting of metal in process

Uses: Phosphatizing paint-preparatory wash for aluminum, zinc, and ferrous metals.

Features: Deposits a hard, dust-free, crystalline phosphate coating on metal which prevents rusting and increases paint adherence. Effectively removes oil and grease, thus promoting uniformity of the final protective coating that will be applied to the metal.

Description: "Ion-Kote" is designed for cleaning of metals in spray-type washers (2 or 3-stage) prior to painting. Contains a blend of wetting agents that effectively removes soil. Average charge for machine washing is from 1 to 3 oz per gallon of water at 150-160°F. Replenishment schedule should be worked out on basis of amount of metal processed and soil removed.

Ion-Kote is a white, granular, dustless powder supplied in 500-lb steel drums. The pH is 3.5 in a 1% solution. Foam is controlled, and no odor or skin irritation results from its use.

Source: Products of the Du Bois Company, Dept. CP, Cincinnati, Ohio . . . or for more information check CP 6408 on handy form, pages 2 and 3.

For more information on product at right, specify CP 6409
... see information request blank between pages 2-3.



THE FIRST 84 YEARS

ARE THE *easiest...*

In 1867, Mallinckrodt opened its doors for business, the first manufacturer of fine chemicals between Philadelphia and the West Coast. The changes that have taken place since then in the scientific world have demanded more and greater skill, controls and equipment in the manufacture of fine chemicals. Our chemists and engineers have continuously met these new demands and in many cases have led the field.

But the changes of these past 84 years are likely to be dwarfed in this era of atomic energy. Our most challenging tasks still lie ahead. We are making the necessary preparations to be ready for them.

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ORGANIC INTERMEDIATES • INORGANIC
CHEMICALS • CHEMICALS FOR ELECTRONIC
USES • METALLIC SOAPS • ANALYTICAL
REAGENTS • PHOTOGRAPHIC CHEMICALS

• MANUFACTURERS OF FINE CHEMICALS FOR INDUSTRY • SINCE 1867 •

**Plastics additive available
free of water-solubles**

Two-page technical service report gives general information and data on lead stearate used for internal lubricants and processing aids in plastics. Previously available in a precipitated form, this material was found to contain enough water-soluble salts to preclude its use for parts subject to electrical leakage. Report deals with lead stearate as made by a fusion process which contains only a negligible amount of these salts. Technical Service Report S-5 is issued by Witco Chemical Company, Dept. CP, 295 Madison Ave., New York 17, N. Y. When inquiring specify CP 6411 on handy form, pages 2 and 3.

**Fabric off-colors prevented by
use of neutralizers containing
brightening agent . . .**

two compounds provide high neutralizing values in textile and laundry application

Uses: Neutralizers for laundry and textile application.

Features: Both products contain the adjuvant, Lexite, an improved brightening ingredient that will not react with bleach, alkali or soap to build up yellow off-colors in the fabric. Sparkling whites are produced, and colors appear bright and clear. When Lexite is present, the blue operation is unnecessary.

Description: The two neutralizers are Erusto-Max and Erusto-Ray. The first has a very high neutralizing value and can be used dry-to-the-wheel or in solution. It is excellent in automatic wheels. Erusto-Max is applied to the wheel in the same manner as conventional laundry sours and, when properly used, automatically holds souring to a neutral range within the wheel and completes neutralization as fabrics are ironed, tumbled or dried. It is intended for use on whites, colors and flat work, and may be used safely on cottons, nylons, rayons, silks and woolsens.

Erusto-Ray, on the other hand, reacts more like conventional sours and is intended for dry-to-the-wheel use only. Its neutralizing value is not as high as that of the first compound but higher than many conventional sours. The product prevents or greatly retards precipitation of rust from the water supply. When using Erusto-Ray, neutralization is completed in the wheel and does not progress with drying or ironing as is the case with Erusto-Max.

Both products are dry, crystalline.

Source: Made by Pennsylvania Salt Mfg. Co., Dept. CP, 1000 Widener Bldg., Philadelphia 7, Pa. . . or for more information check CP 6412 on handy form, pages 2 and 3.

**Converting low octane naphthas
into aviation gasoline
seen in near future . . .**

fluidized operation to be about 1/3 cheaper than present method both in fixed and operating costs

As is well known, the low octane virgin gasolines have been a problem to refiners for years. While they can be disposed of by blending into motor fuel, their low octane ratings have a depressing effect on the quality of the product. Many refiners in the past have built units to thermally reform the naphthas. This method, however, produces low yields of lower octane rating than catalytic

scoop for blitzing bacteria—DOWICIDE PRODUCTS



Bacteria Extracted from
Coating Material



Now you can ward off attacks of bacteria and mold before these micro-organisms become numerous and ruin your production lines and ruin products.

Effective control of mold and bacteria in industry is gained through the use of DOWICIDE products, Dow's industrial germicides and fungicides. Fourteen different kinds of DOWICIDE products are available in both oil and water-soluble types to fight spoilage caused by microorganisms. Alone or in combination, they have brought economical microbial control to many industrial processes.

In textiles, they protect the starch in sizing solutions from decomposition by bacterial attacks. Coating and finishing materials in the leather industry are also protected by DOWICIDE industrial germicides and fungicides, as is the actual leather itself during salt curing, soaking, brining, pickling, chrome tanning and summing.

Other industries that receive proved protection by DOWICIDE products include pulp and paper, paint, metal working and leather.

Now available in the bulk DOWICIDE products today and provide the proper protection against mold and bacteria before their attacks have caused time and materials. Dow maintains complete laboratory facilities to help you solve your problems. Contact your sales or write direct to Midland.

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INDUSTRIAL
GERMICIDES and
FUNGICIDES
THE DOW CHEMICAL COMPANY
MIDLAND, MICHIGAN

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Atlanta • Cleveland • Detroit • Chicago • St. Louis
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DOW
CHEMICALS
INDISPENSABLE TO INDUSTRY
AND AGRICULTURE

When inquiring check 6410 on handy form, pgs. 2-3

MATERIALS

reforming. Fluid hydroforming is expected to be the best method to date.

M. W. Kellogg Co., of New York, will build a 2000 bbl per day fluid hydroforming unit for Pan-Am Southern Corporation at Destrehan, La. This unit is designed to produce 98-175 octane gasoline from 55 octane virgin gasolines. In contrast to fixed bed reformers in which production is periodically stopped while the catalyst is regenerated, the fluid units will constantly withdraw and replace the catalyst for regeneration. Daily operating costs of this method will be 30% lower than those for a fixed bed unit of the same capacity. Furthermore, the fluid unit is estimated to cost one-third less to build.

The fluid catalyst principle, finely supported catalyst supported on vapors and acting as a turbulent fluid, is expected to work in the following way: fresh feed, heated to 950°F will be charged to the base of the reactor. Vaporized naphtha passing up through the catalyst bed will have its straight chain paraffins reformed to aromatic rings. As the treated vapor leaves the top of the unit, cyclones will remove the catalyst particles. The reformed vapors will continue on to the main fractionating towers.

Two apparent advantages are the ease of maintaining a uniform temperature and the moderate pressures which are used. In addition, the yields are expected to be 3 to 5% higher than fixed bed units. Since the product will vary considerably with the operating conditions, it is impossible to state exactly what the fluid unit can accomplish. Under severe conditions, however, a gasoline of 95 octane before leading is expected and under optimum conditions it should be possible to reach 175 octane with the use of lead tetra ethyl.

(Summarized from a report of the M. W. Kellogg Company, Dept. CP, New York City.)

Gives relation between insecticide's structure and its toxicity

Written by head of the Department of Zoology, U. of Western Ontario, 817-page book presents important information as to the relation between molecular structure and toxicity of insecticidal compounds. Relegates detail as far as possible to some 2300 references and is a valuable aid to entomologists, insecticide chemists, pest control operators, aerial crop sprayers, and students of insect toxicology, insecticide chemistry and economic entomology.

Devotes first chapter to treatment of recent chemicals used in insect control such as TEPP and parathion of the organic phosphate group; chlorinated hydrocarbons; botanicals including pyrethrins, rotenone and nicotine; inorganic compounds; and oil, detergents, fumigants and dusts. Discusses the susceptibility of insects to chemical penetration; pharmacology of insect poisons with special reference to effects on nervous systems; equipment for application of insecticides, such as sprayers, generators, and dusters; and the use of aircraft in application of insecticides.

Two chapters explain toxicity of insecticides to man, domestic animals and animal growth. Analyzes in detail the chemicals to be used in control of those particular insects which attack plants, animals and man. Other material indicates the effect of insecticides, especially DDT, on the balance of animal populations. Mention is made of the appearance of resistant strains of susceptible species such as various scales, peach twig borer and houseflies.

To obtain "Insect Control By Chemicals", remit \$12.50 direct to John Wiley & Sons, Inc., Dept. CP, 440 Fourth Ave., New York 16, N.Y. When inquiring specify CP 6413 on handy form, pages 2 and 3.

SEPTEMBER, 1951

Onyx Announces

A NEW
Non-Ionic Detergent

ONYXOL 336

Combining High Viscosity
Foaming...Wetting
and Dispersing Action

THICKENS... aqueous solutions exhibit high viscosity without use of additives.

FOAMS... copiously providing highly stable small bubbles.

CLEANS... both hard surfaces and textiles.

EMULSIFIES... most common oils.

RINSES... easily with good drainage on dishes and glassware.

Suggested for use in industrial cleaning compounds... shampoos of all kinds... bubble bath preparations... cosmetics... buffing and polishing compounds... wettable sulfur... polishes... pigments... foam fire-fighting solutions... ore flotation solutions... household liquid detergents for dishes and laundry.

Write for
Technical Data Sheet
No. Ind. 9



**ONYX OIL & CHEMICAL COMPANY
INDUSTRIAL DIVISION**

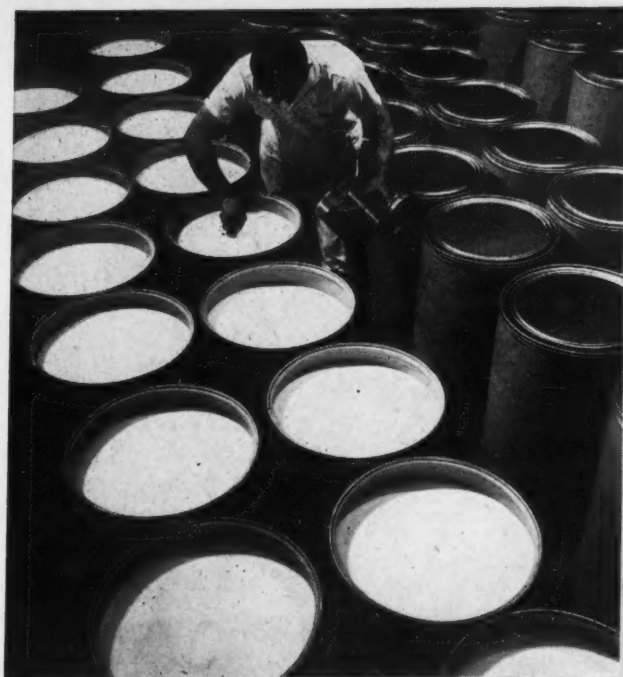
184 WARREN ST., JERSEY CITY 2, N. J.

CHICAGO • BOSTON • CHARLOTTE • ATLANTA

In Canada: Onyx Oil & Chemical Co., Ltd., Montreal, Toronto, St. Johns, Que. For Export: Onyx International, Jersey City 2, N. J.
West Coast Representative: E. S. Browning Co., San Francisco, Los Angeles

When inquiring check CP 6414 on handy form, pgs. 2-3

CITRIC ACID



Additional Supplies Now Available

Citric Acid U.S.P.
Citric Acid Anhydrous
Sodium Citrate VIII Granular
Sodium Citrate U.S.P.
Sodium Citrate Anhydrous
Ferric Citrate
Ferric Ammonium Citrate U.S.P.
Ferric Ammonium Citrate N.F.
Ammonium Citrate Dibasic
Potassium Citrate N. F.

Expanded capacity at Pfizer's plant in Groton, Conn., has made possible increased production of citric acid and its many important derivatives.

Pfizer's recently enlarged citric acid plant at Groton, Conn.



Write for technical data and prices to Chas. Pfizer & Co., Inc., 630 Flushing Ave., Brooklyn 6, N. Y.; 425 North Michigan Ave., Chicago 11, Ill.; 605 Third St., San Francisco 7, Calif.



PFIZER

Manufacturing Chemists for Over 100 Years

When inquiring check CP 6415 on handy form, pgs. 2-3

MATERIALS

Cement insulates and finishes in one-coat application

Two-color folder outlines following characteristics of this finishing cement with insulating properties: composition, adhesion, shrinkage, coverage, set time, workability, temperature limit, and finished surface. An initial set time of less than 15 minutes is reported and a hydraulic set of less than 15 minutes. A graph of thermal conductivity — where Btu/sq ft/hr/inch thick/"F temp differential vs. mean temp "F between inner and outer surfaces — shows a range of loss of 0.45 to 1.05 Btu over a temp gradient of 0 to 800°F.

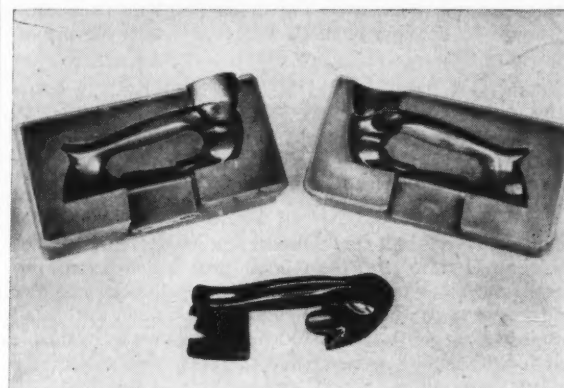
"Powerhouse Cement" is issued by Baldwin-Hill Co., Dept. CP, 500 Breunig Ave., Trenton 2, N. J. When inquiring specify CP 6416 on handy form, pages 2 and 3.

Casting resin hardens at room temp in minutes with accelerator . . .

no need for ovens or overnight hardening; accelerator improves physical properties of resin

Uses: Liquid accelerator for addition to maker's casting resin. Master models, duplicating and foundry patterns, jigs, fixtures, etc., can be rapidly produced.

Features: Accelerated resin hardens at room temperature in matter of minutes. Said to improve the



This handle of cast resin hardened at room temperature in few minutes due to accelerator

physical properties of casting resin. Eliminates need for ovens and overnight hardening.

Description: "Quick-Set" liquid accelerator is for addition to "8000" Tool-Plastic mix. Desired hardening time can be controlled by increasing or decreasing the quantity of accelerator employed.

Source: Development of Rezolin, Inc., Dept. CP, 4825 W. Jefferson Blvd., Los Angeles 16, Calif. . . . or for more information check CP 6417 on handy form, pages 2 and 3.

Offers 'pinch hitter' for refined carnauba wax . . .

higher melting point than carnauba, said to have about 1/3 its cost; emulsions easily prepared

Uses: Water emulsions of this wax may be used for almost any purpose for which a carnauba or candelilla emulsion is suitable. . . self-polishing floor waxes, paper sizings and coatings, citrus fruit wax dips, protective

CHEMICAL PROCESSING

U.S.I. CHEMICAL NEWS

September ★ A Monthly Series for Chemists and Executives of the Solvents and Chemical Consuming Industries ★ 1951

Intravenous Alcohol Good General Pain-Killer

Favorable results have been reported in 2000 cases where alcohol-water solutions were injected intravenously to relieve pain. Doctors state that patients have no "doped" feeling, but rather a sense of well being.

The physicians anticipate that it may be possible to eliminate entirely the use of opiates and other sedatives in postsurgical cases by steady injection of an alcohol-water solution over a 24-hour period. Unlike opiates, alcohol does not lower respiratory activity. Also, again as distinct from opiates, it tends to dilate blood vessels rather than constrict them, so that injecting patients with heart trouble is recommended by the doctors as an aid in the use of anesthetics.

An added advantage of the alcohol therapy, especially in cases where patients have been weakened by their illness, is that alcohol has a nutritional value because it is quickly converted into energy by the body.*

New Theory: Reduction, Not Oxidation, Causes Paint Deterioration

A reducing action, rather than oxidation, may be the cause of paint deterioration, according to a new chemical theory. Evolved in work on auto finishes, the new theory may also apply to house paints and other protective coatings.

It was thought in the past that the dull film or "chalk" that sometimes develops on auto finishes was caused by combination of the lacquer or enamel materials with oxygen of the air. In tests, lacquer and enamel films were subjected to hydrogen peroxide to see if it would hasten the process, but the attempts failed. Realizing that under certain conditions hydrogen peroxide may act as a reducing agent, the researchers set up these conditions by smearing water or a wetting agent on the test panels, whereupon "chalk" formed in a matter of minutes.

Develop More New Uses For Polyvinyl Pyrrolidone

A new polyvinyl pyrrolidone product, to be used by dyers for removing color from textiles and said to have no harmful effects, has been placed on the market, a German company reveals. Another new polyvinyl pyrrolidone product for use as a laundry cleaning agent is reported in the experimental stage. Other experiments are in progress for improving medicinal and other products made with polyvinyl pyrrolidone.

New Booklet Reviews Fertilizer Technology

Special articles reviewing the activities of the Tennessee Valley Authority in fertilizer technology are featured in a recent issue of a government bibliography of technical reports. Chemical plant facilities are described and research work with phosphates, nitrates, and potash is covered. Also listed are currently available chemical engineering reports on the subject.

Southern Dealers to Show New U.S.I. Sound Movie On Pyrenone Grain Protectant

Insect Infestation Problem in Stored Grain Is Dramatized To Farmers by Cartoon Character 'Wicked Willie Weevil'

A 16 mm sound movie film that will run about 15 minutes is being readied for showing by Pyrenone Grain Protectant dealers throughout the South.

The film features a cartoon character called "Wicked Willie Weevil."

Wicked Willie Weevil tells the story of insect damage to stored grain and how Pyrenone Grain Protectant stops it. The film uses this cartoon character to dramatize to farmers

Bond Silicone Rubber To Steel, Other Surfaces

A method of joining silicone rubber to steel and other surfaces in a permanent bond stronger than rubber itself, has reportedly been discovered. Key to the process is said to be a thin, glue-like "primer," which forms a strong bond between silicone rubber and many surfaces besides steel, including glass, ceramics, aluminum, tin, and copper. Development of the primer is expected to increase the usefulness of silicone rubber in structural combination with metals.

To produce the bond, the liquid primer is brushed or sprayed on the metal or glass surface to be joined to silicone rubber. After drying, the surfaces are placed together and light pressure is applied at about 250°F. The resulting bond is claimed to withstand temperatures from -85°F. to 500°F. In laboratory experiments, the bond has shown a strength of about 700 pounds per square inch of holding area.

Possible applications include engine and shock mounts and heavy-duty washers or gaskets, for industrial applications, made of glass fibre bonded between layers of silicone rubber.

New Chemical Skin For Wrapping Foods Is Edible

A new edible skin for wrapping food products, said to seal in odor and flavor, to keep out moisture, and to be comparatively resistant to bacteria and mold, has been developed. Chemically the new skins are known as acetostearins and are prepared by direct acetylation of monostearin with acetic anhydride. These acetostearins, claimed to be relatively stable, solidify to a flexible but non-greasy solid. Over half of the acetostearins prepared by the chemist responsible for the development stretched over 800% at 22°C., and no cracking was observed at temperatures as low as 4°C., according to his report. The acetostearins are said to be as easy to apply as paraffin.

Germans Synthesize Carotin

A process for making synthetic carotin for use in vitaminizing and coloring margarine has been developed by a German scientist. Work is now underway to adapt the laboratory synthesis to commercial production.



Most southern corn cribs are of open construction. Insects have little difficulty stealing corn from farmers when it's so easy to enter the crib.

the seriousness of the insect problem to stored grain in the South. The film will be shown

MORE

Colloid Chemicals Prevent Kidney Stone Formation

A new method of preventing formation of kidney stones is being based on the theory that growth of these crystal deposits in the kidneys is prevented in normal persons by the presence in the urine of certain types of colloid. Research indicates that the stones are most prevalent in people lacking these colloids. Various types of colloid will gel at certain concentrations and prevent mineral matter in the urine from crystallizing. Results obtained thus far from injecting colloidal agents into the body are described as very encouraging.

Synthesize Plant Sugar Outside of Plant Cell

For the first time plant sugar has been produced outside of a plant cell according to a recent report by a university scientist. When a test tube containing a mixture of water, carbon dioxide, and various substances taken from hog and pigeon livers and from plant leaves, was exposed to light, the mixture was transformed into plant sugar, it is claimed.

September ★

U.S.I. CHEMICAL NEWS

★ 1951

CONTINUED

New U.S.I.
Sound Movie

at a series of dealer-farmer meetings to be held in southern towns before harvest season. While the film will be the main feature of the meeting, it is anticipated that individual dealers will arrange for local entertainment and serve refreshments to insure good attendance.

The new movie tells the story of Pyrenone Grain Protectant quickly and effectively. The



Insect infested corn has lost so much of its food value that it is practically worthless for livestock feeding.

mass showings that the film makes possible will enable U.S.I. to introduce its new Pyrenone Grain Protectant to a large number of people in a short time.

Requests Pour in
for 'Quart Jar Test' Kits

Another item that has been creating a tremendous amount of interest among southern farmers and dealers is the "Quart Jar Test" kit. This kit contains a sample of Pyrenone Grain Protectant and other necessary pieces to set up a small-scale test. To make the test, the farmer shells corn from his crib into two one-quart mason jars. He treats the corn in one of the jars with Pyrenone Grain Protectant and leaves the other untreated. Within 30 to 60 days the farmer can see clean corn, with a few dead insects visible, in the treated jar, while the untreated one swarms with live weevils.

Requests for the Quart Jar Test kits have been pouring in to U.S.I. and are positive evidence of the urgent need for a product that will control stored grain pests.

New Condensation Method
Produces Vinyl Polymers

A new condensation procedure, now in the laboratory stage, reportedly has possibilities for use in producing vinyl polymers. In the laboratory, condensation of formaldehyde with the following compounds is said to have given these high yields of monomethylol derivatives: with acetone, 84%; with methyl ethyl ketone, 91%; with diethyl ketone, 75%, and with nitromethane, 64%. Reactions were carried out, it is claimed, by refluxing an activated compound like methyl ethyl ketone from a heated flask into a fractionating column packed with glass helices. Formaldehyde and sodium hydroxide catalyst were added slowly at the top of the column, and a large excess of ketone over formaldehyde was maintained in the reaction zone, according to the report. The monomethylol derivative is said to have been removed from the reaction zone by continuous rectification before self-condensation or secondary actions could take place. The sodium hydroxide is reportedly neutralized in the boiling flask to prevent further aldol condensations.

Use Electron Bombardment
To Cause Polymerization

The possibility of making solid plastics from liquid raw materials by bombarding them with high-voltage electron beams is foreseen as a result of recent experiments reported by two scientists. Chemical means are usually used to initiate polymerization, but the scientists have found that a beam of electrons with energies of 800,000 volts, brought into the open air, is also able to cause such polymerization.

Most of their experiments were performed with tetraethyleneglycol dimethacrylate but they stated that various other compounds could similarly be polymerized with cathode rays. Among these, it is claimed, are styrene, acrylonitrile, and methacrylates. The recent experiments were performed with a modified million-volt X-ray machine.

TECHNICAL DEVELOPMENTS

Information about manufacturers of these items may be obtained by writing U.S.I.

A new type adhesive to meet storing and shipping needs reportedly will seal tight and open easily. Used now in palletizing, it is described as strong enough to hold stacked merchandise and as breaking clean and fast in unstacking. (No. 721)

A new refractory coating, said to give a smooth, hard surface for greater reflection of heat and to lengthen life of firebricks, is easy to apply by brush or spray, and will not crack off or flake, the makers state. (No. 720)

A new joint sealing compound is claimed to hold carbon tetrachloride, ethylene dichloride, benzene, toluene, xylene, propane, chloroform, methyl chloride, and many other difficult-to-hold compounds. (No. 721)

A new coating for polystyrene plastics, designed for use on the reverse side of clear plastics, gives a finish almost as brilliant as plating or metalizing, according to the manufacturers. (No. 722)

A new primer that wets rust is reported capable of locking paint film—particularly vinyls—to surfaces having adherent rust. Compatible with all finishes tried on it thus far, it reduces splitting of top vinyl finished to nearly zero, the makers claim. (No. 723)

"Electric sheets" of white, maize, blue, or pink mercerized broadcloth are on the market. Made with either single or dual controls, the sheets will operate from any 115-volt AC outlet. (No. 724)

For measurement of dry film coatings, a new easy-to-use, fast reading, self-contained gauge requiring no outside source of power is reported available. Results are said to be independent of composition or thickness of base on which the coating is being measured. Base need only be electrically conductive. (No. 725)

A new vinyl plasticizer for use in sheeting, wire covering, shoe soles, and other compositions that must withstand severe flexing and stretching, is claimed to impart flame retardance and to have high permanence on heat aging and aging in water, gasoline and oil. (No. 726)

New chemical resistant bags for shipping and storing organic substances like foods and fertilizers and many other chemicals are described as economical, easy to print, and highly resistant to water vapor. Made of paper coated with odorless and tasteless polyethylene resins, the bags are said to be strong and durable and to keep packed foods fresh. (No. 727)

Crystal-clear bonding of white styrofoam is reported possible using a vinyl-based cement now in use for cementing other plastics. This cement answers the need for an efficient, water-white, non-staining adhesive, it is claimed. (No. 728)

PRODUCTS OF U.S.I.

ALCOHOLS

Amyl Alcohol (Isoamyl Alcohol)
Butanol (Normal-Butyl Alcohol)
Fusel Oil—Refined
Propanol (Normal-Propyl Alcohol)

Ethanol (Ethyl Alcohol)

Specially Denatured—all regular and anhydrous formulas
Completely Denatured—all regular and anhydrous formulas
Pure—190 proof U.S.P., Absolute—200 Proof
Solox*—proprietary solvent—regular and anhydrous

ANTI-FREEZE

Super Pyro* Anti-Freeze
U.S.I. Permanent Anti-Freeze

ANSOLS

Ansol* M
Ansol* PR

ACETIC ESTERS

Amyl Acetate—Commercial and High Test

Butyl Acetate
Ethyl Acetate—all grades
Normal-Propyl Acetate

OXALIC ESTERS

Dibutyl Oxalate
Diethyl Oxalate

PHTHALIC ESTERS

Diethyl Phthalate
Dibutyl Phthalate
Diethyl Phthalate

OTHER ESTERS

Dialol*
Diethyl Carbonate
Ethyl Chloroformate

INTERMEDIATES

Acetoacetonilide
Acetoacetyl-ortho-chloroanilide
Acetoacetyl-ortho-toluidide
Acetoacetyl-para-chloroanilide

Ethyl Acetoacetate
Ethyl Benzoylacetate
Ethyl Sodium Oxalacetate

ETHERS

Ethyl Ether, U.S.P.
Ethyl Ether, Absolute—A.C.S.

ACETONE — A.C.S.

FEED PRODUCTS

Curboy B-G*
DL-Methionine
Riboflavin Concentrates
Special Liquid Curboy*
U.S.I. Vitamin B₁₂ and
Antibiotic Feed Supplements
Vacatone* 40

RESINS (Synthetic and Natural)

Arachem*—modified types
Aroflame*—pure phenolics
Aroflat*—for special flat finishes

Aroplaz*—alkyds and allied materials
Congo Gums—raw, fused and esterified
Ester Gums—all types
Natural Resins—all standard grades

INSECTICIDE MATERIALS

CPR Concentrates: Liquid & Dust
Piperonyl Butoxide
Piperonyl Cyclonene
Pyrethron* Concentrates: Liquid & Dust
Pyrethrum Products: Liquid & Dust
Rotenone Products: Liquid & Dust

INSECTIFUGE MATERIALS

Indalone*
Triple-Mix Repellents

OTHER PRODUCTS

Collodions
Ethylene
Nitrocellulose Solutions
PIB*—Liquid Insulation
Urethan, U.S.P.
Special Chemicals and Solvents

*Reg. U.S. Pat. Off.

U.S.I. INDUSTRIAL CHEMICALS CO.
Division of National Distillers Products Corporation

60 EAST 42nd ST., NEW YORK 17, N. Y.



BRANCHES IN ALL PRINCIPAL CITIES

MATERIALS

coatings, auto polishes, leather finishings and dressings, etc.

Features: With this domestic wax, cost per pound is reported to be about 1/3 of that for imported, refined carnauba wax. In addition, melting point is 86°C, or about 5° higher than that of carnauba. Easily made emulsions are translucent, light in color, highly stable, and yield high gloss finishes. Strict laboratory tests assure uniformity of each batch of the wax.

Description: Refined Concord Wax #407 is packaged in 180-lb bags, and has the following specifications: 86°C melting point, 16.2 acid number, 64.2 iodine number, 51.1 saponification number.

Recommended formulation: 80 lb Concord Wax #407; 12.7 lb oleic acid; 7.6 lb 2-amino-2-methyl-1-propanol; 6 lb borax; and sufficient water to make 100 gal. To obtain better spreading qualities and superior gloss, addition of 20% of the following resin solution is recommended: 119 lb Durez Resin 15546; 44.5 lb ammonia 26° Baume (28%); and 837 lb water.

Source: Development of the Concord Chemical Company, Dept. CP, Moorestown, N. J. . . . or for more information check CP 6418 on handy form, pages 2 & 3.

Cases can be sealed in 20 to 45 sec . . .

dextrine base adhesive bonds tightly, can be applied by hand or in automatic case sealer

Uses: For sealing shipping cases. Can be used without dilution on automatic machines, or with some water dilution when applied by hand brush. Satisfactory for all varieties of container board.

Features: Bonding strength is reported to be excellent; carton flaps have to be torn to open container. Dried adhesive resists exposure to high humidities. Drying time is 20 to 35 sec. Product is non-corrosive, non-toxic and non-injurious to hands, face or clothes. Storage life is indefinite.

Description: Boxseal is a dextrine base adhesive with no odor and weighing 9½ lb/gal. It is non-inflammable. Water is used for dilution and cleanup. Coverage is 50 to 75 sq ft/lb.

Source: Paisley Products, Inc., Dept. CP, 1770 Canalport Ave., Chicago 16, Ill. . . . or for more information check CP 6419 on handy form, pages 2 and 3.

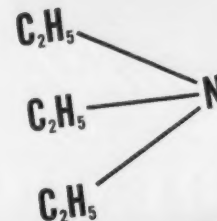
Tabulates heat treating data, tempering effects on tubings

Four-page bulletin offers assistance in solving problems involving the use of alternate grades of medium carbon, or full hardening, grades of tubing steels. Presents condensed data on microstructure, critical points, effect of alloy elements (nickel, chromium, molybdenum, manganese), forging, machining and welding for 12 alloy steels used in the production of tubular parts. In addition, tables are given on the generally accepted temperatures for heat treating these alloy steels and the effect of tempering (400 to 1300°F) on the hardness developed by quenching. Bulletin TDC 141 is issued by The Babcock & Wilcox Tube Co., Dept. CP, Beaver Falls, Pa. When inquiring specify CP 6420 on handy form, pages 2 and 3.

For more information on product at left, specify CP 6421 . . . see information request blank between pages 2-3.

SEPTEMBER, 1951

DOUBLE CHECKED
✓
FROM RESEARCH
TO INDUSTRY



SHARPLES

TRIETHYLAMINE

SPECIFICATIONS

Color Clear and Water White
Specific Gravity @ 20/20°C. 0.73
Triethylamine Content 98.5% (Min.)
Distillation (100% between) 85.0-91.0°C

OTHER PROPERTIES

Molecular Weight (Calc'd) 101.2
Flash Point (open cup) 20°F.
Average Weight per gallon 6.07 lb.

Triethylamine is miscible in all proportions with water below 18°C. but its solubility rapidly decreases as the temperature is raised. It is soluble in most common organic solvents.

APPLICATIONS

- ✓ Solubilizing Agent for 2, 4-D and 2, 4, 5-T acids
- ✓ Antilivering agent for enamels
- ✓ Intermediate for quaternary compounds
- ✓ Catalyst
- ✓ Solvent
- ✓ Selective extractant

For further information, write to Dept. D



SHARPLES CHEMICALS INC.

350 Fifth Avenue, New York

80 E. Jackson Blvd., Chicago

Martin, Hoyt & Milne, Inc., Los Angeles, San Francisco, Portland, Seattle

Shawinigan Chemicals Ltd., Montreal, Quebec, Toronto, Ontario

Export: Airco Company International, New York

When inquiring check CP 6422 on handy form, pgs. 2-3

Quality FINE CHEMICALS

EDWAL Chemical Productive Capacity

PLANT

PERSONNEL

EXPERIENCE

... enables you to obtain your increased chemical requirements quickly ... without permanent plant expansion

For nearly twenty years Edwal has manufactured and marketed quality fine chemicals for use as intermediates, process raw materials and formula ingredients for the chemical, pharmaceutical and graphic arts industries and the government. These years of manufacturing experience are available to you on contract.

Competent chemists and chemical engineers supervise all phases of manufacturing from research through production and formulation, in bulk or packaged for use.

Contract arrangements are flexible, designed for the client's specific needs, with full provision for confidential handling and patent protection.

Edwal has the plant capacity, the necessary equipment, and trained personnel to handle subcontract work efficiently.

Phone or write outlining your needs. We will give full information on how we can serve you.

EDWAL
LABORATORIES, INC.

Phones: Wonder Lake 2411
Chicago Exch.
DEarborn 2-5919

Plant and Office ...
RINGWOOD, ILLINOIS

When inquiring check CP 6423 on handy form, pgs. 2-3

MATERIALS

Offers fire protection against polar solvents

Two-color, four-page bulletin describes a mechanical foam effective against polar solvents. It has been tested and found satisfactory with methanol, ethanol, isopropanol, isopropyl ether, diethyl ether, acetone, ethyl acetate, isopropyl acetate, gasoline, and acrylonitrile, among others. Material can be used with existing mechanical foam equipment and is equally effective against petroleum and other fires where foam is indicated.

Bulletin points out that foam is still mobile at 10°F and that freezing will not permanently change characteristics.

Further information on the foam material is given with illustrations of foam equipment. Bulletin 500A is issued by National Foam System, Inc., Dept. CP, West Chester, Pa. When inquiring specify CP 6424 on handy form, pages 2 and 3.

Puts hard overlay on steel ...

welding alloy deposit fights wear and corrosion

Uses: Electrode deposits strong, dense overlays with good corrosion resistance. Recommended for use with carbon and alloy steel surfaces that are subjected to severe abrasive wear and comparatively mild impact.

Features: Said to offer the resistance to abrasion, impact and corrosion normally associated with far more costly hard overlays. Deposits at lower amperages, hence minimizes distortion and stress.

Description: EuteChrom 2X is a FrigidArc flux-coated alloy for AC and DC arc welding. It is available in 1/8, 5/32, 1/4 and 3/16" diam.

Source: Product of Dept. P, Eutectic Welding Alloys Corp., Dept. CP, 172nd St. and Northern Blvd., Flushing 58, N. Y. ... or for more information check CP 6425 on handy form, pages 2 and 3.

Details uses of alloy

Two-color folder presents information on uses and applications of hard facing alloys. Usage has been in the welding field, but now many different type castings are being made, such as automotive valve seats, chuck jaws, valve balls and machine gibs. "Your Profits Go Up" is issued by Diamond and Tools Inc., Dept. CP, 19345 John R., Detroit 3, Mich. When inquiring specify CP 6426 on handy form, pages 2 and 3.

ALCONOX *cleans better
cleans quicker*

THIS AMAZING NEW CLEANSER LIFTS OFF HARD-TO-CLEAN DIRT — FAST

SOAPLESS, YET SUDS FREELY — Metalware, machinery, tools, porcelain, silverware ... so you needn't buy different cleaners for different jobs. Alconox leaves no film or streaks. It's easy on the hands, too.



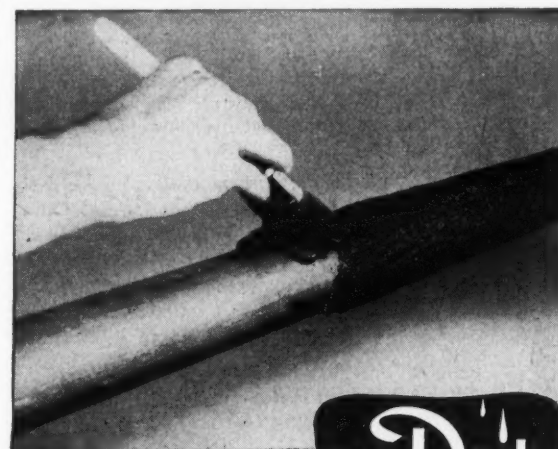
SAVES TIME AND LABOR

Because it works quicker ... toweling practically unnecessary. A little Alconox goes a long way. One spoonful makes a gallon. Leading laboratories, hospitals, food and industrial plants use it—like it. So will you. Try it on your toughest job.

If your dealer cannot supply you, write for literature and samples.

ALCONOX, INC. DEPT. CP.
61 Cornillon Ave. Jersey City 4, N. J.

When inquiring check CP 6427 on handy form, pgs. 2-3



COVERS PIPES TANKS, WALLS

NoDrip

Anyone can brush, trowel or spray NoDrip on any clean, dry surface. Goes on like plaster, forms a seamless, protective coating. **STOPS CONDENSATION DRIP!**



NoDrip keeps equipment and floors safe and dry; prevents corrosion of metal and prolongs its life. Acid, alkali and brine resistant. Comes in 1, 5, and 55 gal. drums, ready for use.

TRY NoDRIP

Apply NoDrip to a small area, compare the results with uncovered portions.

Send for free NoDrip Handbook
J. W. MORTELL CO., 530 Burch St., Kankakee, Ill.

When inquiring check CP 6428 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Metal-phosphatizing compounds meet Government specs . . .

increase paint bond and inhibit under-paint corrosion. Granodine compounds are used on pre-cleaned steel, iron and zinc surfaces to produce a smooth, crystalline coating of zinc-iron phosphate that bonds paint, inhibits under-paint corrosion and adds to paint life and metal protection. Compounds can be sprayed, dipped or brushed at various temperatures. The finish meets Government specifications, as indicated in table. Only those specifications which are considered of most general interest are included here.

Specification	Specification Title
JAN-C-490, Grade I	Cleaning & preparation of ferrous metal surfaces for organic protective coatings
JAN-F-495	Finishes for equipment hardware
JAN-T-704	Treatment & painting (for construction & engineering equipment)
AN-F-20	Finishes for electronic equipment
USA 57-0-2 Type II, Class C	Finishes, protective, for iron & steel parts

(Granodine chemicals are part of the line of such compounds made by American Chemical Paint Company, Dept. CP, Ambler, Pa. . . or for more information check CP 6429 on handy form, pages 2 and 3.)

Develops welding electrode for chrome-moly steels . . .

heat defects in weld area are minimized by low amperage application

Uses: Welding electrode is especially intended for repair and maintenance work on chrome-moly steels.

Features: Relatively low amperage application minimizes heat defect in the weld area. Welds are said to have high tensile strength.

Description: "EutecTrobe" is a chrome-nickel content electrode. Its FrigidArc coating permits application in all positions with smooth arc action. Offered in the following sizes: 1/16, 5/64, 3/32, 1/8, 5/32, and 3/16" diameters.

Source: Development of the Eutectic Welding Alloys Corporation, Dept. CP, 172nd St. & Northern Blvd., Flushing, New York, N. Y. . . or for more information check CP 6430 on handy form, pages 2 and 3.

Inform on hydrogen peroxide and cites propellant use

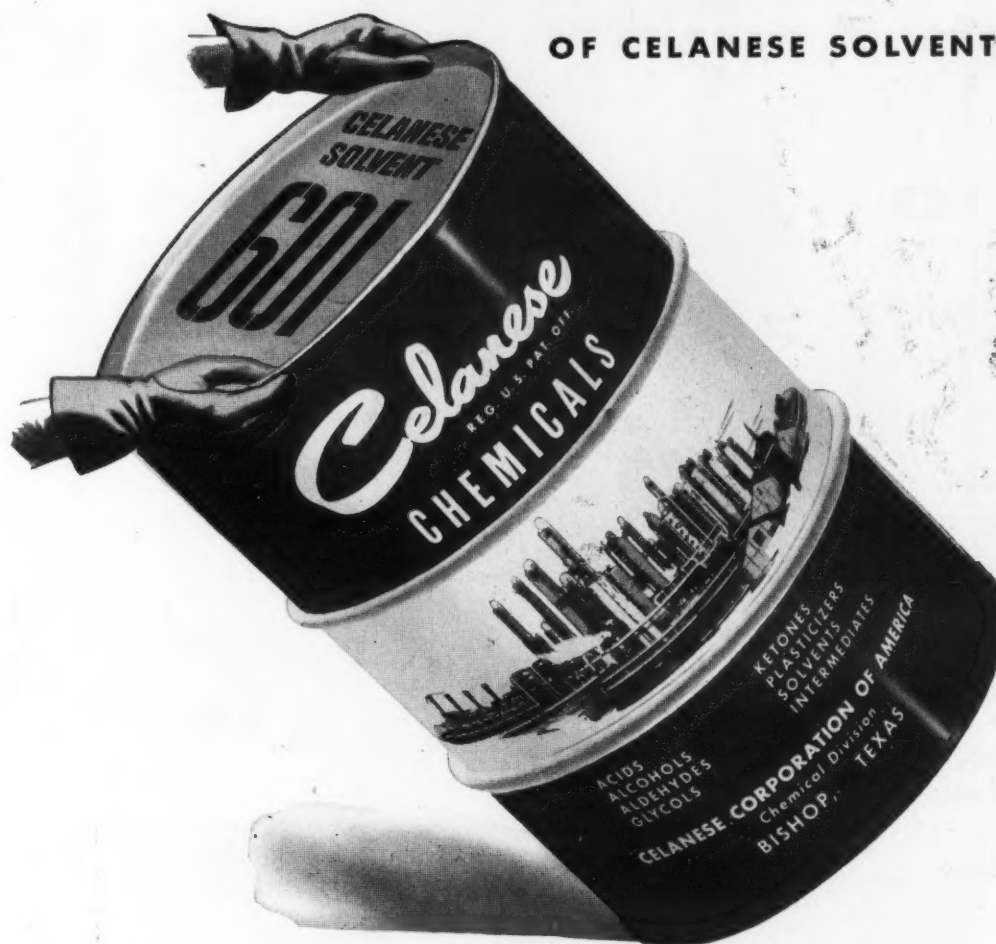
Seven-page reprint of article by E. S. Shanley in May 1951 issue of the Journal of Chemical Education details formation and uses of hydrogen peroxide. Explains commercial manufacture by barium peroxide method and procedure involving electrolytic oxidation of a bisulfate solution and subsequent hydrolysis and distillation. Physical properties and some of analytical procedures for compound are mentioned.

Large sections are devoted to industrial uses such as bleaching of cotton, wool; manufacture of other peroxides; production of porous articles; chemical synthesis; and in generation of power as in V-2 rockets and experimental submarines. Reprints are available by requesting Bulletin 2A from Station B., Becco Sales Corp., Dept. CP, Buffalo 7, N. Y. When inquiring specify CP 6431 on handy form, pages 2 and 3.

Paint, Varnish and Lacquer Manufacturers are sold on the

PERFORMANCE RECORD AND PRODUCTION ECONOMY

OF CELANESE SOLVENT 601



The paint industry has found in Solvent 601, a medium evaporating solvent which gives superior performance at lowest cost.

Replacement For Methyl Ethyl Ketone

Celanese Solvent 601 is being widely used as a complete replacement for methyl ethyl ketone, ethyl acetate, isopropyl acetate and similar solvents, in the production of varnishes, lacquers and other nitro-cellulose formulations.

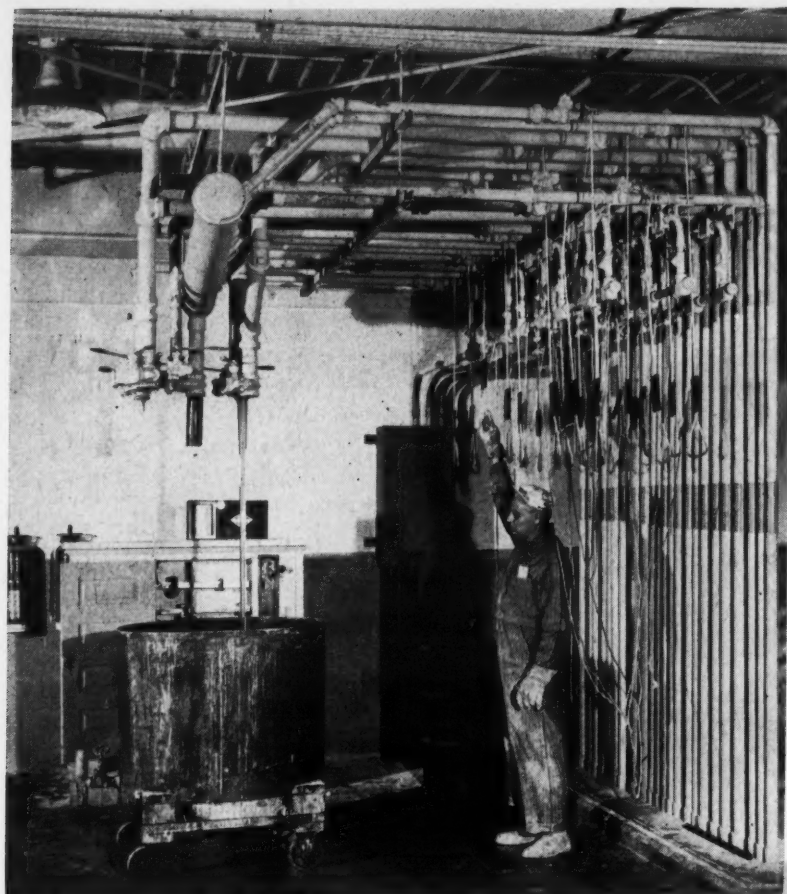
Solvent 601 is now available in volume quantities.

Investigate its performance possibilities. For samples, prices, additional information, write: Celanese Corporation of America, Chemical Division, Dept. 505-1, 180 Madison Ave., N. Y. 16.



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NORMAL PROPANOL • BUTYLENE GLYCOLS • DIPROPYLENE GLYCOL • PROPYLENE GLYCOL • PROPYLENE OXIDE • TRICRESYL PHOSPHATES

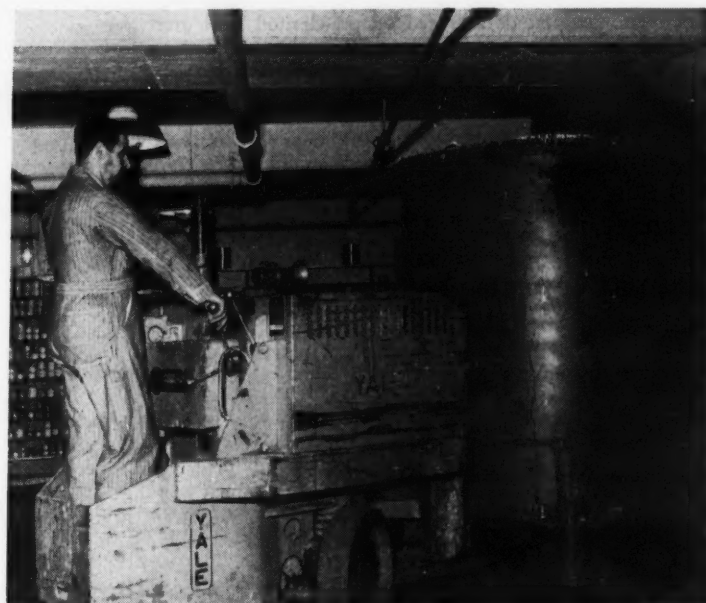
When inquiring check CP 6432 on handy form, pgs. 2-3



Liquid ingredients are delivered to batching department from tank farm and basement storage via piping and remotely controlled pumps. Twenty-three liquids are ready at fingertip control for mixing operation

☆

Five-ton electric platform truck carries 600-gal tank with self-contained agitator from main-floor thinning section to mezzanine straining section to take advantage of gravity



Solution to Paint-making Problems Found in Layout of Recently Opened Plant

Products flow by gravity in structure that is mainly one-story; raw materials and mixing sections cleverly isolated

THE Pittsburgh Plate Glass Company recently opened its 11¼-million dollar paint, varnish, resin, and industrial-automotive finish plant at Torrance, California. Layout of the plant was aimed at solving 3 outstanding paint-making problems: 1) that of utilizing gravity flow without need for constructing an overall 2-level structure; 2) that of isolating raw pigments and liquids from the batching and mixing sections; and 3) that of isolating pre-mixing from roller mill operation.

Only the center section of the main manufacturing unit is 2-level construction; remainder of the plant and office buildings is single-level. The 2-level manufacturing section includes a second-floor batching and mixing department, a mezzanine pre-mixing and straining section, and a main-floor tinting and thinning section. Main floor also houses the packaging section.

Electric trucks (platform and lift types) assist in utilization



Five-foot manholes in pre-mix decks lead to roller mills below. One-ton hoist lowers batches to mills, after which manhole covers are replaced to isolate operations

of gravity flow. For example, platform trucks carry 300 to 600-gal drums with self-contained agitators from the thinning and tinting main-floor section to the straining section on the mezzanine via an elevator, from which the product flows by gravity to the main-floor packaging section.

Isolation of raw pigments from the batching department is accomplished by constructing the raw pigment warehouse on the main-floor level adjacent to the second-floor batching department. Doors near the pigment warehouse ceiling give access to the batching department and allow lift trucks to pass palletized sacks of pigments. When the necessary pigments are transferred from the warehouse to the batching department, the access doors are closed to shut out dust or pigments from the mixing operation.

Liquids are safely isolated from the batching department too — resin and varnish are stored in tanks located in the plant's basement, and thinner and oils are stored in a tank farm in the plant's yard. A remote control system of pull-chain switches in the batching department actuates pumps at the points of storage, delivering liquid for mixing.

Floor of the batching department is made of removable

CHEMICAL PROCESSING

sections of 18-ga steel plate that give access through flooring port holes to 17 ball and pebble mills. Pebble mills which grind only white pigments are mounted at ceiling height just under the batching-loading dock. Moving parts and gearing are completely isolated from both floors by decking.

When mills are loaded, port-hole covers are replaced to isolate one deck from the other.

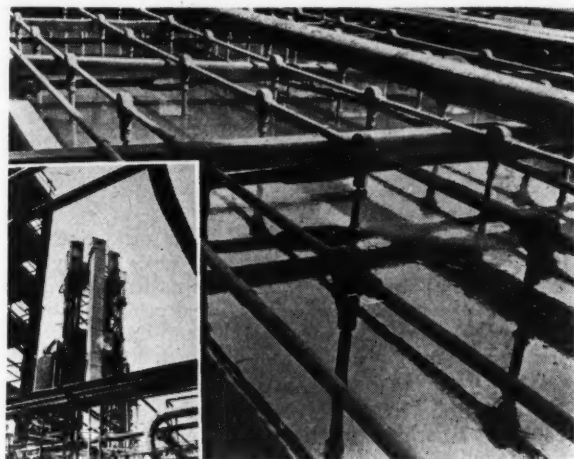
Mezzanine pre-mixing is isolated from main-floor roller mills. The pre-mix section which is directly over the roller mills is accessible to them only through a series of 5' diam manholes in the floor. Over these manholes runs a monorail carrying a 1-ton hoist. Pre-mixed batches are lowered to the mill floor by the hoist, and then the man-hole covers replaced to complete the isolation.

(Pittsburgh Plate Glass Company, Dept. CP, Torrance, California.)

Open condenser boxes using cathodic protection at oil refinery . . .

system uses selenium rectifiers to furnish DC power Standard Oil Company of Ohio's No. 1 refinery at Cleveland is using a cathodic protection system to eliminate corrosion in their open condenser tanks. These condensers are used on stock coming from the high temperature, high pressure cracking unit. They are used to condense and cool the stock for storage.

This means of protection was chosen in view of the numerous factors involved in corrosion protection in this case. The open tanks hold water which constantly contains dis-



Network of electrodes placed to afford good protective coverage. Inset shows cracking tower where gases to be condensed originate

solved oxygen in addition to small quantities of impurities which get into the tanks. Combined with high temperatures, dissimilar metals and other factors, this constituted a potentially bad situation in a dangerous spot.

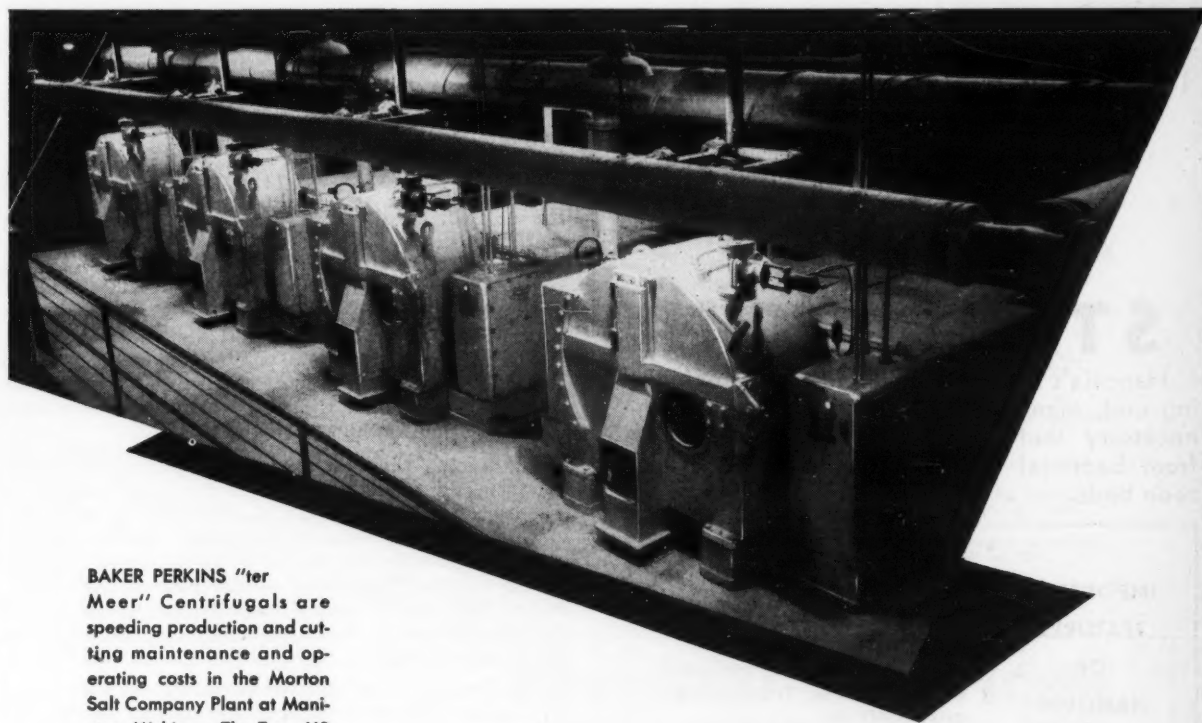
Electrodes of the installed system were spread in a network designed to give good coverage of the tanks and piping. DC power for the installation is being furnished by a selenium rectifier. Protection resulting from the installation is cutting maintenance, down time, and greatly reducing the danger of equipment failure in this vital spot.

(System was engineered by Cathodic Protection Division, The Harco Corporation, Dept. CP, 16918 Broadway, Cleveland, Ohio . . . or for more information, check CP 6433 on handy form, pages 2 and 3.)

SEPTEMBER, 1951

CENTRIFUGATION

at a consistently high rate of production and a high degree of efficiency with four BAKER PERKINS HS-36 centrifugals at MORTON SALT CO.

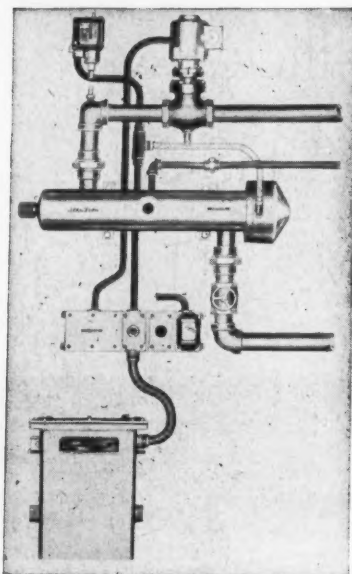


BAKER PERKINS "ter Meer" Centrifugals are speeding production and cutting maintenance and operating costs in the Morton Salt Company Plant at Manistee, Michigan. The Type HS Centrifugals shown here are fully automatic but can be provided with manual controls if necessary. BAKER PERKINS makes a complete line of "ter Meer" Centrifugals for the chemical processing industry. Write today for complete information.

BAKER PERKINS INC.
CHEMICAL MACHINERY DIVISION
saginaw, michigan

When inquiring check CP 6434 on handy form, pgs. 2-3

*What is the
bacteriological
aspect of your
deionized
water?*



HANOVIA STERITRON

Hanovia's Steritron, mounted after a deionizing unit, eliminates frequent regeneration, unnecessary shut-downs and assures protection from bacterial contamination built up in the resin beds.

IMPORTANT FEATURES OF HANOVIA STERITRON

- Completely automatic.
- Stainless steel throughout.
- Separate control unit.
- Manual wiper device for internal cleaning.
- 100% moisture resistant oil-immersed transformer and controls.
- Designed for wall mounting as a single unit or in multiples.

Write for Steritron folder

HANOVIA CHEMICAL & MFG. CO.
DEPT. L, NEWARK 5, N. J.

When inquiring check CP 6435 on handy form, pgs. 2-3

Ideas

Paper Containing Holes, Windows Can Be Coated with Polyethylene in New Process

Extrusion-lamination method ups output, permits better control of thickness and adhesion

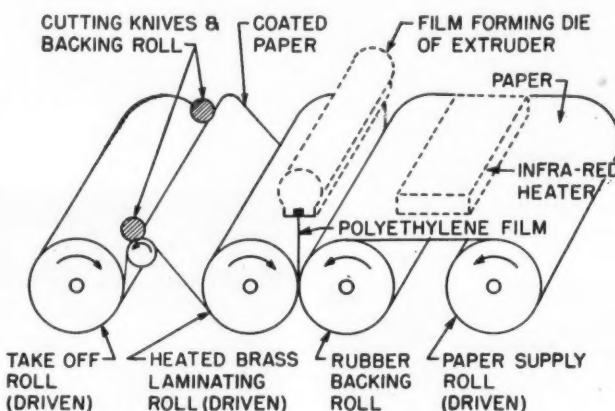
A RELATIVELY new method of coating paper with polyethylene involves the lamination of hot, extruded film directly to the paper as the film is produced by a screw-type extruder. The process permits coating paper containing punched holes and windows, and also improves output rates, control and range of thickness, and control of adhesion.

The die of the extruder in the process is T-shaped. Plastic, after passing through screen and breaker plate of extruder, enters at the base of the T, flows along the stem and leaves the die through a slit along the top edge of the T. It is customary to reduce the viscosity of the plastic flowing to the ends of the die by heaters. This is done to obtain a uniform film across the full width.

For extrusion of thin film which is to be laminated to paper, it is generally desirable to have the resin temperature in the neighborhood of 225-250°C (437-482°F) at the die so as to improve adhesion to the paper. Higher temperatures are generally not recommended because of the resulting thermal degradation of the polymer. However, at very high rates of output where the thermal history of the polyethylene in the extruder is shorter, a compound temperature as high as 275°C (527°F) is used sometimes.

Careful control of operating temperatures and screw speed are required if good quality film and constant output rates are to be had. Whether manufacturing unsupported or laminated polyethylene products, it is necessary to have as constant a rate of output as possible for uniform thickness.

Since the screw is the moving element in the extruder and since it has the largest surface area in contact with the plastic, the speed and temperature of the screw determine output rates to a large extent. However, there are altogether three basic factors involved: 1) actual speed of screw, 2) frictional slippage between screw and plastic, and 3) temperature of material. Higher speeds generally mean higher output, up to a limit. Above this limit, higher speeds may mean either a poorer or no product.



Schematic diagram showing extrusion-lamination of polyethylene film to paper

Higher speeds mean that the plastic is moving through the extruder faster and receives less heat by the transfer process.

Cylinder temperatures usually must be raised to compensate. However, if the screw itself becomes too hot, the material fouls on the screw and output decreases very markedly. It is best to control screw temperature in the range of 60-90°C (140-190°F). Fouling generally occurs at temperatures above 110°C (230°F) on the

screw. Polyethylene film leaving the die of extruder is laminated almost immediately to paper. Over a very few inches, the polyethylene film is stretched down to the desired thickness. Final thickness depends, of course, on the thickness of the extruded film and the ratio of the speed of laminating rolls to the linear output speed of the extruded film.

The laminating roll is usually operated at 38-60°C (100-140°F). To achieve this temperature range, it is necessary to heat roll at start of run and then circulate cooling water through it as heat is transmitted to the roll from film.

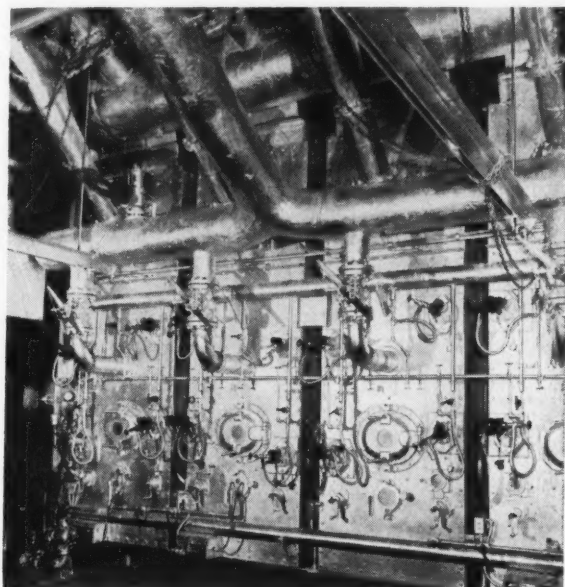
Operating temperatures in the high portion of the temperature range are used when maximum adhesion of the film to paper is desired. However, temperatures over 60°C usually cause the polyethylene to stick to the laminating roll. In many cases it is desirable to preheat the paper somewhat before lamination, to further enhance adhesion. Pressure does not appear to be as critical as temperature in determining the amount of adhesion between paper and plastic. Pressures between laminating roll and rubber back-up roll range from 75 to 200 lb per linear inch of roll length, with 100 lb per inch being common.

(Summarized from 32-page booklet, "Bakelite Polyethylene for Paper Coatings—Properties and Coating Methods," published by Bakelite Company, a Division of Union Carbide and Carbon Corporation, Dept. CP, 122 E. 42nd St., New York 17, N. Y. . . . or for more information check CP 6436 on handy form, pages 2 and 3.)

Pipeline insulation applied to reduce noise . . .

mineral wool felts on gas header stop shrieking Long Island Lighting Company's Glenwood Landing 170,000 kw power station uses natural gas on some of their high temperature installations. Header and four burner lines connected to the pipe line produced a constant shrieking as the high velocity gas shot through them. Although the temperature of the incoming gas was about 30°F — far below the range where lagging would be used to prevent heat loss — mineral wool insulation was applied to the T of the line and header. The thought behind this move was to reduce the unnerving noise originating in the pipes.

One layer of mineral felt 1-1/2" thick was covered with two layers of insulating cement. After tying in wire mesh, a coat of asphaltic mastic was trowelled on, glue sized and painted with two coats of aluminum paint.



The finished appearance is shown in cut where the T is shown just above the center. The former shrieking has died to a murmur so quiet that it cannot be heard above the normal plant noises.

(Courtesy of Industrial Mineral Wool Institute, Dept. CP, 441 Lexington Ave., New York 17, N. Y.)

Decals hasten return of containers . . .

colorful 'stickers' stay on in spite of rough handling, washing, chemical splashes, high humidities

To obtain more and quicker returns of returnable metal, glass and composition containers, some manufacturers are turning to use of durable, colorful decal nameplates. These nameplates are said to be highly resistant to abrasion, moisture, fungus, temperature extremes, acids, alkalis, alcohol and petroleum products. According to their manufacturer, they retain legibility and perfect adhesion for years, without cracking or peeling.

Nameplates are washable, colorfast, and can be made in any size, color or design. Important servicing and storage instructions can be included on the decal. They can be applied to any rough, smooth or crinkled surface.

(Manufactured by The Meyercord Co., Dept. CP, 5323 W. Lake St., Chicago 44, Ill.)

SEPTEMBER, 1951

"Tough Fluids Flow Easily For Us with Thermal Electric Pipe Transport!"

"Our first step in engineering industrial fluid transport layouts is to specify Thermal Electric. This method of passing electricity through the same pipe that carries the fluid meets any requirements.

"Temperature is no problem. Thermal Electric will safely move fluids varying from luke-warm chocolate to liquid asphalt at 450°F. Precise automatic controls hold it within 2°F. of the design temperature.

"By using systems in tandem, we cover any distance. This zone-control also nails down the problem of different ambient temperatures. Fluids flow from cold outdoors to warm indoors with no temperature change.

"We design single discharge lines with no return loops and effect tremendous savings in critical materials and capital investment. With all-electric

operation cutting maintenance practically to zero, the savings often pay for the original investment in less than a year!

"If pipe transport of heated fluids is among your projects, it would pay you to get the whole story of Thermal Electric Industrial Systems."

Fluid Systems, Inc. are specialty engineers in the handling of industrial viscous fluids. We are available as special aides to consulting or staff engineers in designing transport systems for any fluid.

YEARS OF PERFORMANCE

American Hard Rubber Co.
Asphalt: 182' at 450°F.

Duff Baking Mix Division
American Home Foods, Inc.
Molasses: 970' at 140°F.

Congoleum-Nairn, Inc.
Emulsion Paint: 337' at 100°F.

General Mills, Inc.
Corn Syrup: 223' at 110°F.

Individual Drinking Cup Co.
Paraffin: 1,489' at 170°F.

Monsanto Chemical Company
Water: 742' at 70°F.

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Thermal Electric and Fluid Systems, Inc. are trade marks registered in the U. S. Pat. Off.

When inquiring check CP 6437 on handy form, pgs. 2-3

Less Expensive "Felted" Filter Does Most Clarifying Jobs Better

Many chemical firms, faced with a fluid-filtering problem, turn to a Cuno MICRO-KLEAN filter for the solution.

In most cases, the MICRO-KLEAN gives perfectly satisfactory clarification and for less cost—measured in money and maintenance—than other types.

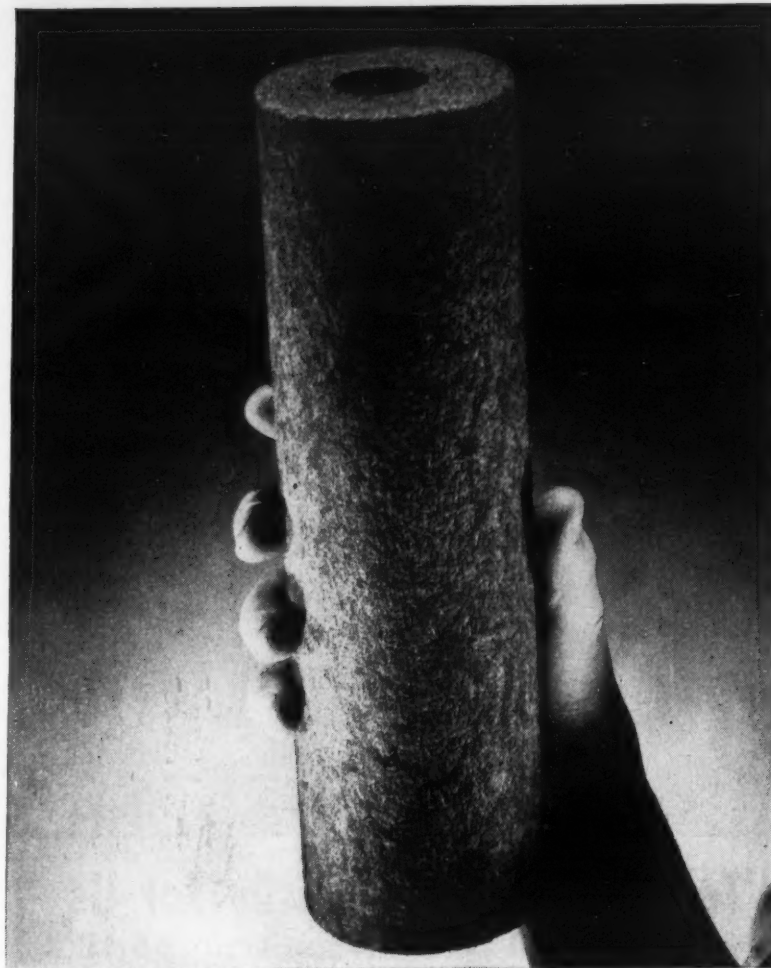
The MICRO-KLEAN cartridge is a simple, compact structure of "felted" fibres, with no internal or external supports to take up space and complicate installation. Instead of periodically *renewing* the filter, the inexpensive cartridge is thrown away and replaced—quickly and with no mess.

The MICRO-KLEAN cartridge is mechanically strong, due to resinous impregnation and polymerization. It won't swell or shrink, soften or harden, rupture or channel—or otherwise release contaminants.

MICRO-KLEAN'S greater dirt-holding capacity means fewer cartridge changes, larger batches per set of cartridges. The greater dirt capacity comes from maximum porosity (85-90%) and from its exclusive "graded density in depth", permitting smaller particles to penetrate further, rather than "loading" the surface.

Cuno MICRO-KLEAN handles a wide range of fluids with low pressure drop, and is guaranteed to remove 100% of all solids for which it is rated* plus a large percentage down to 1 micron.

*10, 25, 50 microns.
Capacities: a few to over 800 gpm.



The Simplest Filter Cartridge Lasts the Longest...Twice as Long

Cartridge renewals are cut at least *in half* when Cuno MICRO-KLEAN replaces any other filter. And throughout its service life, MICRO-KLEAN is *guaranteed* for specific performance.



Fluid Conditioning

Removes More Sizes of Solids
from More Kinds of Fluids

Strain fuels, lubricants, process fluids, etc.—AUTO-KLEAN
Filter fuels, lubricants, process fluids, etc.—MICRO-KLEAN
Clean raw water, recirculating water, etc.—FLO-KLEAN

When inquiring check CP 6438 on handy form, pgs. 2-3

IDEAS

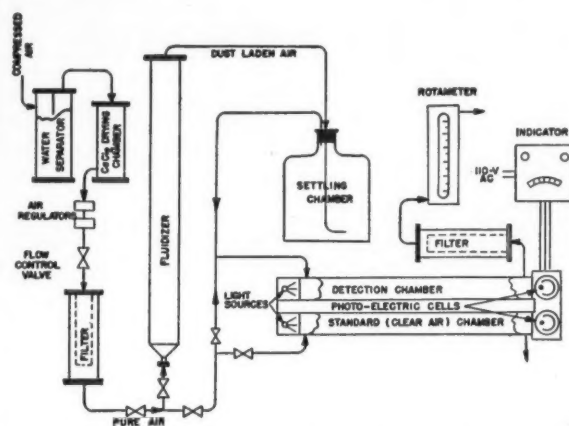
New detection method for low concentrations of dusts in gases . . .

photoelectric device used by Bureau of Mines detects 0.75 gr/100 cu ft gas — will be improved

Bureau of Mines has developed a new method for continually determining low concentration of dust in gas. Development of the method was promoted by the Bureau's work in production of synthetic liquid fuels from synthesis gas — where the slightest traces of dust in the gas can destroy the compression machinery in a few minutes, as well as affect the synthesis catalyst.

The materials and equipment used in the method can be divided into two groups. The first group includes all materials used to produce a constant flow of dust through the detector chamber, and the second includes all parts of the optical instrument and measuring devices.

The first group consists of a dust fluidizer, air regulator, two needle valves, a water separator, and screw clamps. Fluidizer was made from 100 mm glass tubing 4' in length. Bottom was made from a plastic funnel, and the top was a rubber stopper with a glass tube leading to the settling chamber. Air regulators were standard Fischer instruments for 3 cfm with inlet pressures up to 200 psi. A water separator was constructed from an iron chamber containing a baffle and was connected to a larger chamber containing calcium chloride. The settling chamber was a 5 gal bottle.



Apparatus for testing continuous dust detectors

Second group consists of a photoelectric device built by the Ess Instrument Co. Light sources were two standard 115 v, 60 w tungsten-filament lamps using reduced voltage. Photocells were RCA tubes #925. Current produced was amplified in a 2-stage amplifier.

Detector chambers for the photo unit consisted of two 2 1/2" pipe 3' in length. Filter used in determining dust content of the gas was made from fine filter paper and was enclosed in 100 mm glass tube.

Runs were first made to determine the minimum amount of dust that the instrument could detect — 0.75 gr/100 cu ft air.

Filtered air was then admitted to the clear chamber for approximately 5 min to completely purge it, after which the inlet and outlet were clamped-off and the air was bypassed to the detector chamber. After purging 5 min to remove any loose particles, the dust was started by bypassing part of the air through the fluidizer. Remaining air was continued as diluting air in order to obtain any

CHEMICAL PROCESSING

Cuno Engineering Corporation
Dept. 163C, South Vine Street, Meriden, Conn.
Please send information on Cuno MICRO-KLEAN
for following service

Name Title

Company

Address

City Zone State

Please attach to business letterhead

desired concentration of dust. High velocities were used to minimize settling of main dust particles from air stream. As fines gradually left the fluidizer chamber, concentration of dust was held constant by varying the proportion of air through the fluidizer. Total flow was kept constant.

From detection chamber, air was sent through a weighed filter for dust determination and through a rotameter for measurement. After approximately 2 hr, air valve was shut off and the filter removed and weighed.

The Ess device was satisfactory in every respect except that its sensitivity was merely 0.75 grain per 100 cu ft. Work is continuing with the object of improving this factor.

(Summarized from Report of Investigations 4782, *Investigation of a Photoelectric Device for the Determination of Low Concentrations of Dust*, Bureau of Mines, 4800 Forbes St., Pittsburgh 13, Pa.)

Several factors involved in present shortage of sulfur . . .

US supplied less than 1/3 of world's pre-war sulfur; now furnishes 51% by increased production

Even though US production of brimstone has increased 146% since the pre-war years 1935-39, 6-1/2% of last year's total sulfur requirements were met by digging into stockpiles. The shortage in 1951 is expected to be substantially greater, and the stockpiles have been depleted to what is considered a minimum. Normally a two year reserve was maintained. Supplies for only six months were on hand in January of this year.

Two of the major causes for this condition are the fact that foreign sources have not yet recovered from war damage, and US sulfur (cheaper and purer than most foreign products) has been a preferred material when foreign facilities were rebuilt. Domestic consumption has also risen markedly. Shipments within the US were 180% higher last year than the annual average during the '35-'39 period. Pre-war per capita consumption here was 35 lb/yr, it now stands at 75 lb/yr.

Ordinarily a situation such as this would have been remedied by development of new sources. The Frasch process, however, produces a 99% pure product which can be marketed, even now, at \$21 or \$22 per long ton. Foreign producers using other sources and processes sell their product at as high as \$75 to \$100 per long ton. Exploitation of these high cost sources has been all but impossible economically.

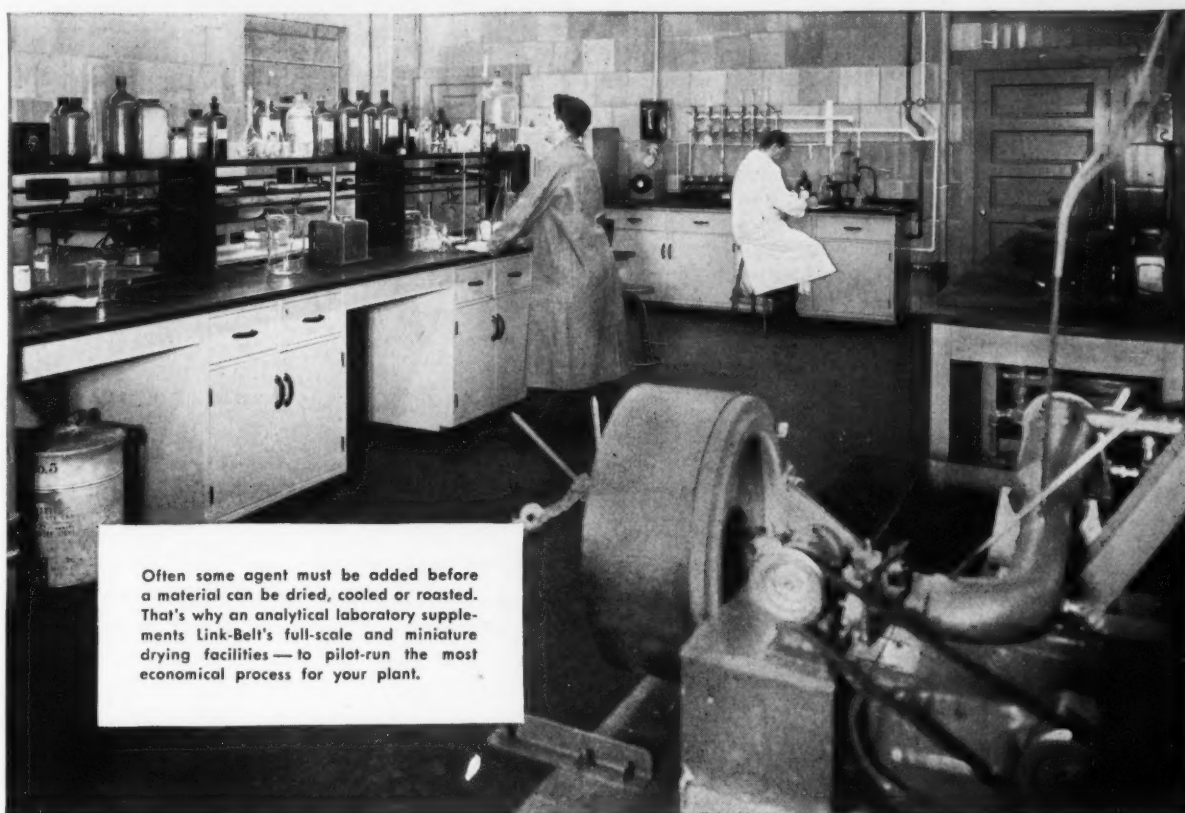
Why, then, have not our sources using the Frasch process been expanded? They have. Existing facilities are operating at top capacity. In order to prove a sulfur deposit of the salt-dome type used by the process, however, the full scale plant for supplying superheated water must be built. The risk involved in large scale construction, which in many cases is in a remote location, has deterred any great expansion. Even so, three new locations are being developed.

The long range outlook seems to hinge on a rise in the price of sulfur which will allow the vast potential of sources such as sulfides, gypsum, and others to be realized. Development of previously unused salt-dome deposits will be offset by the decline in production of old wells as they are depleted.

(Summarized from, "Facts About the Sulphur Shortage"—Freeport Sulphur Company, Dept. CP, 122 East 42nd St., New York 17, N. Y.)

**AN INVITATION
to manufacturers
with drying, cooling
or roasting problems...**

**We'll tell you how your
material can be dried economically**



Often some agent must be added before a material can be dried, cooled or roasted. That's why an analytical laboratory supplements Link-Belt's full-scale and miniature drying facilities—to pilot-run the most economical process for your plant.

**LINK-BELT can analyze and test-run your material in the
laboratory, work out processes that can be duplicated in your plant...**

Don't gamble—you can be sure in advance what equipment, what processes are needed to dry, cool or roast your materials profitably. Take advantage of these facilities . . . send a sample—a pound or a ton of your product to the Link-Belt laboratory today.

Capitalize on the know-how gained through more than 1000 product tests we've conducted in this laboratory. Tests and research that have resulted in the installation of 500 Link-Belt Dryers in the field . . . successfully processing 100 different materials.

If you can't send samples, we'll be glad to put a unit on loan right in your own plant. For complete information, call your nearest Link-Belt office or plant . . . today.

LINK-BELT COMPANY: Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8, Springs (South Africa). Offices in principal cities.



When inquiring check CP 6439 on handy form, pgs. 2-3

Oil well production extended by chemicals . . .

fat-derived materials are added to water employed in washing last of oil out of sand

When an oil well is near the end of its production, openings are drilled around it and water is pumped into the ground to wash more oil out of the oil-bearing sand. Even when this is done, 25 to 30% of the oil remains below the surface after the well is abandoned. In some extreme cases, as much as 50% has been left.

Two types of chemicals have been found useful in obtaining larger recoveries. Ethomid HT/60, made from beef tallow, increases the ease with which water flows through the sand. Tests have shown that its use may increase the total amount of oil a well produces by as much as 10%. Quaternary ammonium compounds act in another way. They prevent corrosion of the water pipe and equipment, and kill bacteria which block the sand pores. The quaternary — Arquad 2C — has been very successful in this job.

Significance of the chemicals is shown by the estimate that each 1% increase in recovery of oil from American wells will boost U. S. oil reserve by a billion barrels.

The chemicals are effective in small quantities, as little as five parts to a million parts of water.

Method has been tested in California, Pennsylvania and Texas. Now, Oil Recovery Chemicals of Austin, Texas, are starting to introduce it in Texas, New Mexico, Louisiana, Arkansas and Oklahoma. This company has a laboratory in Austin for studying the requirements of the particular fields. The treatment must be tailor made for the individual field because no two underground oil reservoirs are alike.

(Chemicals are made by Armour and Company, Dept. CP, Chicago 9, Ill., in their McCook, Ill., plant.)

Plate may be horizontal to vertical with hidden arc welding process . . .

method opens new possibilities for use of technique, makes welding less expensive

Automatic hidden arc welding (electric arc hidden beneath bed of granular flux) has been limited to jobs where joint to be welded is in position for downhand welding. A process developed recently removes this limitation, permitting positioning of the plate being welded anywhere from flat to vertical, the joint being horizontal. The process—it's called "3 o'clock welding"—opens new possible applications for hidden arc techniques, and is said to greatly reduce welding costs.

Joints can be welded from both sides at once, reducing actual arc time on a given joint by about 50%. Handling and set-up time are less since welds do not have to be positioned for downhand welding. Smaller sizes of electrode wire are used, thus resulting in lower currents, less flux and electrode, welds of smaller cross-sectional area. Welds can be made in straight seams or following an irregular contour. Tendency for burn-through is reduced, and back-up strips can be eliminated where two arcs are used on opposite sides of the work.

Process consists of new welding methods, procedures and equipment wherein the previous difficulties of directing the electrode and retaining flux and molten metal in a joint not lying flat are overcome. It is reported to be ideal for fabricating pipe, box sections, special I-beams

pointers

to

BETTER PROCESSING

EQUIPMENT INFORMATION FOR PROCESSING PLANTS

Crown Cork and Seal Finds

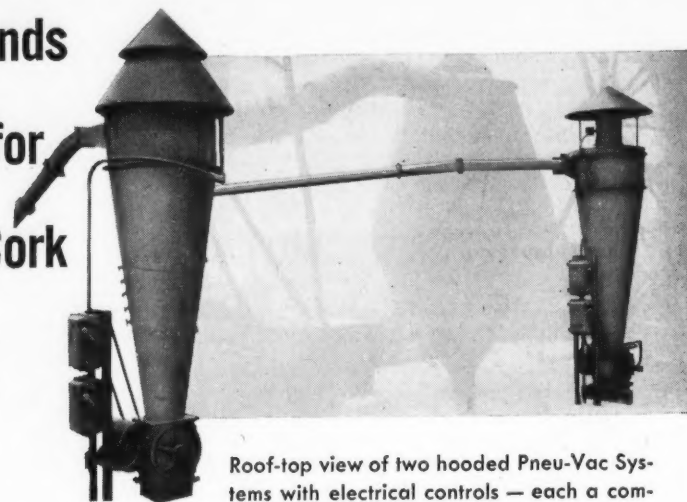
PNEU-VAC Ideal for Conveying Granulated Cork

PROBLEM: The Crown Cork and Seal Company, Baltimore, Md. faced costly operating problems—due to obsolete mechanical conveying equipment. The only answer was major repairs or complete replacement.

A careful study revealed that two Sprout-Waldron pneumatic handling systems could carry the same load in one-fourth the space . . . at half the cost for an overhaul job. So, Pneu-Vac replaced four old channel flight conveyors.



Compact basement installation shows two 4" Pneu-Vac pipelines which take away cork granules from under dryer. Each Pneu-Vac handles 3,000 lbs. of cork per hour.



Roof-top view of two hooded Pneu-Vac Systems with electrical controls — each a compact integral conveying unit requiring no maintenance and taking but little installation space.

The odds overwhelmingly favored Pneu-Vac on other counts, too:

- (1) It's compact—easy-to-get-at.
- (2) It removes heat and dust—improves working conditions.
- (3) Cork granules are air-conveyed without disintegration.
- (4) Maintenance cost is way down.

RESULTS: Mr. F. L. Good, project engineer at Crown Cork and Seal has this to say about PNEU-VAC:

"Our Pneu-Vac System has eliminated two complete mechanical handling systems with no reduction in our original production schedule of 6,000 lbs. of granulated cork per hour.

"We consider this the outstanding step forward in ten years, and appreciate the opportunity to show this system in operation."

KEEP AHEAD OF COMPETITION WITH SPROUT-WALDRON EQUIPMENT



pointers

to

**BETTER
PROCESSING**

EQUIPMENT INFORMATION FOR PROCESSING PLANTS

Streamlined Materials Handling of Bulk Chemicals

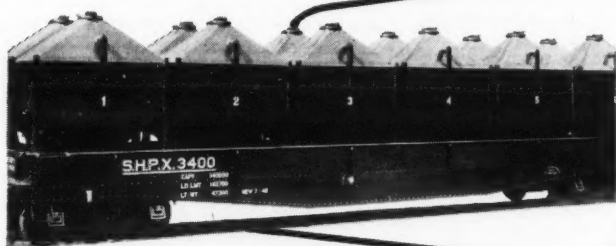
For years calcium carbide, used in acetylene and synthetics, was shipped in 1000 lb. steel drums. Loading a shipment of carbide was slow, arduous work, eating up plenty of man-hours. Depreciation on drums due to rough handling was especially high. And, loss through spillage was an evil accepted by both manufacturer and consumer.

The growing demand for carbide by large industrial users necessitated a more efficient, economical method of handling carbide in bulk.



The SOLUTION: A five-ton capacity, all-steel, air-tight portable container which discharges directly to the acetylene generator. Units can be nested by the dozen on flat cars or loaded on trucks in sets of three.

RESULT: Each container holds 10 times more carbide...is filled, sealed, and moved mechanically with lowest costs ever! Sprout-Waldron built over 2500 of these specially designed containers. Why not take advantage of this wealth of experience? We can also help you cut corners in the moving of bulk chemicals.



For further information about this equipment write to Sprout, Waldron & Co., Inc., 10 Waldron St., Muncy, Pa.

Sprout-Waldron
Manufacturing Engineers
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When inquiring check CP 6440 on handy form, pgs. 2-3

IDEAS

and H-sections, field erection of large outdoor storage tanks, machine frames.

Standard Lincoln LAF-2 welding heads with fillet guide attachment, travel carriage and either an SAE-600 ampere or SAE-900 ampere welder can be used. This equipment can be adapted for 3-directional adjustment of head to accommodate work. Flux can be handled by making copper flux dams or dams held by magnets. Some applications permit using moving belts for holding flux when work is moved and head held stationary.

(Process is development of The Lincoln Electric Company, Dept. CP, 12818 Coit Rd., Cleveland 1, Ohio.)

Water — most important raw material

Pollution is so seriously cutting down the supply of usable water for industrial and domestic requirements that widespread construction of treatment facilities will be necessary during the next 10 years to conserve water resources for the nation's current emergency and future growth, states a spokesman for the Federal Security Agency.

A recently published report sets forth the first national summaries of data from initial State and Federal studies for the development of comprehensive pollution abatement programs on the nation's waterways. To meet present needs for 10,000 new waste treatment plants, replacements, additions or enlargements, and to keep up with future industrial expansion and population growth over the next decade, will require public and private investments totalling 9 to 12 billion dollars. The 10,000 waste treatment plants required represent only a part of the present needs since the needs of 1,600 municipalities and 5,500 industrial establishments are still undetermined. Studies to date show that a total of more than 22,000 sources of pollution in the US are nearly equally divided between 11,800 municipal sewer systems and 10,400 independent factory waste outlets.

(Summarized from "Water Pollution in the United States", Federal Security Agency, Public Health Service, Washington 25, D.C.)

Mastic allows for expansion of turbine scroll cases in dam, avoids concrete cracks...

prepared in field from cork and coal tar product that preserves cork, prevents rusting

The scroll cases of turbines used in large hydropower dams are subject to stresses induced by hydrostatic pressure that can cause expansion of the cases. This stretching could cause radial cracking of the concrete adjacent to the scroll case. The Government, however, has been using a method of design that allows for expansion of the scroll case, yet holds it rigidly enough to prevent vibration.

A mixture of cork and "CA-5" is troweled onto the top two-thirds (approximately 240") of the scroll case before concreting. CA-5 is a coal-tar base material with thixotropic properties. It preserves the cork and prevents rusting of metal parts.

The mastic is made on the construction site by mixing CA-5 with granulated and sized cork.

(CA-5 is a product of Reilly Tar & Chemical Corporation, Dept. CP, 1615 Merchants Bank Bldg., Indianapolis, Ind.)

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WILLIAMSPORT 4, PA.

PUMCUPS

When inquiring check CP 6441 on handy form, pgs. 2-3

IDEAS

Rust inhibiting vapor released from paper wrapper guards metal parts and machinery . . .

wrapper made of impregnated kraft sheets, cemented together and re-inforced with spun glass fibers

Heavy machinery and bulky metal parts are protected against rust by a heavy-duty packaging paper that has been treated with a volatile type rust inhibitor. Tough, resilient and tear-resistant, it is composed of two high-strength kraft sheets, cemented together, and reinforced with spun glass fibers. Inner ply is impregnated with Callex, a volatile rust-inhibiting chemical. When a metal product is completely covered with this paper, a vapor is released which



Rust preventive wrapper lines case for bar stock

prevents rust from forming. That is, the synthetic chemical inhibitor volatilizes and enters the air of the package. Exuded vapor inactivates moisture in the air and makes it non-corrosive.

This heavy-duty paper is one of a series of papers designed to cover a series of requirements for this type of protection. Paper is called Vapor Wrapper and is made by Glas-Kraft, Inc., Lonsdale, R. I. It is identified as Nox-Rust No. 120 Glas-Kraft grade.

(Nox-Rust No. 120 Glas-Kraft grade is available from Nox-Rust Chemical Corp., Dept. CP, 2429 S. Halsted St., Chicago, Ill. . . or for more information check CP 6442 on handy form, pages 2 and 3.)

Orifice-membrane combination reduces surge effect in pipelines . . .

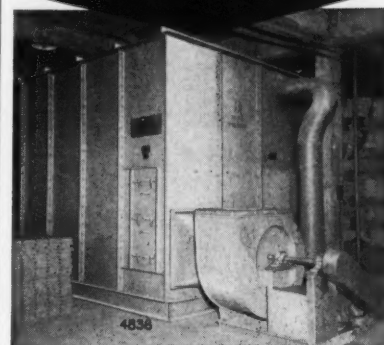
installation on mud pump removes 96% of the surge Pulsations in oil pipelines or surges caused by closing a valve in drilling operations can have a damaging "water hammer" effect. A device called the Fluidynamic Desurger has been successfully used to eliminate this condition. Using B. F. Goodrich Chemical Company's Hycar American rubber, an orifice-diaphragm combination which will withstand both the swelling action of oils and the abrasion encountered in mud pumping has been built.

Consisting of a pipe with a series of throttling orifices, the device is in a position to act upon and affect any shock pressure head within the liquid column moving through

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A typical SLY dust control installation in a cement plant. Hundreds of SLY Dust Filters in cement plants collect dust generated in such operations as crushing, grinding, screening, conveying, loading and packing—Saving valuable materials, adding to net income.

Your Dust Problem Solved

- EFFECTIVELY —
- INEXPENSIVELY

We've found that people often *endure* dust for years before they investigate and find out how effectively and inexpensively dust can be controlled.

In this business of dust control — like many others — experience is the best teacher. We have been learning for 50 years—and still are. With thousands of installations, we have a wealth of experience in all industries. We'd like to share this wealth by discussing your particular problem with you. SLY representatives are trained and experienced engineers.

There's no obligation involved. You may be agreeably surprised at how *effectively* and *inexpensively* your dust problem can be solved. Ask for Bulletin 98.



THE W. W. SLY MANUFACTURING CO.

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When inquiring check CP 6443
on handy form, pgs. 2-3

CHEMICAL PROCESSING

the Desurger. A second pipe, larger in diameter, completely surrounds the first and forms a chamber between the pipes. This chamber is divided by a membrane made of Hycar. The membrane, or sleeve, is balanced with relation to nominal line pressure by loading of the annular chamber with gas or air. Any excess head or volume moves out of the liquid column through the orifices and in so doing is throttled. As the liquid causes the membrane to expand into the gas volume, more energy is removed from the surge. Finally, as the excess liquid is forced back through the orifices again into the pipeline, more energy is removed by the throttling action.

In one installation designed to dampen mud pump pulsation, the engine rpm settled from a variation of 1800 to 2400 to a variation of 2100 to 2200. At the same time pressure variations dropped from 950 to 2250 psi to 1850 to 1900 psi. This represents a surge removal of 96%.

(Fluidynamic Desurger is a product of Valve Engineering & Development Company, Dept. CP, Tulsa, Okla.)

NBS devises micro-tester for checking hot-hardness of platings . . .

based on diamond indentation methods, instrument overcomes several problems of design

A tester for measuring the hardness of electrodeposits at high temperatures has been developed by Dr. Abner Brenner of the National Bureau of Standards. Based on the diamond indentation method, the instrument uses only a small sample of the metal under test and can be operated at temperatures as high as 900°C.

Principle of using a point whose proportions are known has been modified in the following ways. First, due to the thinness of the plating, deep indentations would not serve. Shallow indentations made with a low load were used instead. The second major problem was to maintain the desired temperature and still have the specimen available for the test.

The temperature problem was complicated by the fact that if the specimen, heated to a high temperature in open air, were available for test, the hardness results would be high because of oxides formed. These problems were overcome by keeping the specimens in an enclosed muffle, in an inert atmosphere. In order to use this arrangement, the fused silica shaft of the indenter travels through a close fitting opening sealed and lubricated with graphite. In addition, the inert atmosphere inside the chamber is kept under sufficient pressure so that the slight leakage is outward.

Another important refinement is the micrometer positioning stage, by means of which the microscopic indentation can be located in a small microscope field. Here, the micrometer used in positioning the sample for indentation gives a reading which also locates the 'dent' under the microscope.

Temperature is recorded and controlled during operation. While no comparable instrument is available for checking the accuracy of the method in the higher temperature range, tests in the normal temperature range indicate a good reproducibility. Deviation on a large group of samples tested at all temperatures was consistently less than four percent.

More detailed account is available in J. Research NBS 46, 126 (1951) RP 2185.

(Summarized from a report of National Bureau of Standards, US Dept. of Commerce, Washington 25, DC.)



HERCULES POWDER COMPANY
Parlin, N. J.

PROBLEM:
Transfer of
Chlorinated Solvents

SOLUTION:
PYREX brand
"Double-Tough"
Glass Pipe

Here's another typical example of PYREX brand "Double-Tough" Glass Pipe at work — doing an important job for Hercules Powder Co. The glass pipe, pictured above, is used for transferring highly corrosive chlorinated liquids at Parlin, N. J.

Highly resistant to every acid except hydrofluoric . . . as well as many alkalis . . . PYREX brand glass pipe has proven entirely practical for handling corrosive solutions. Chemically stable, it will not contaminate even the most sensitive products. Its remarkable ability to withstand rapid temperature change permits instant switching from hot to cold solutions. Highly resistant to mechanical shock and unaffected by weathering, PYREX

brand glass pipe is practical for both inside and outside use.

You'll find the transparency of glass pipe another big advantage. You can keep an eye on the flow, catch sedimentation, crystallization, or discoloration of liquids at a glance — before any real harm is done. What's more, PYREX brand glass pipe is as economical as any corrosion resistant material on the market today. Easy to install and maintain — your own help can do the job. It's a time tested plant material available now through strategically located distributors. For your copy of the PYREX brand "Double-Tough" Glass Pipe Catalog, mail the coupon today.



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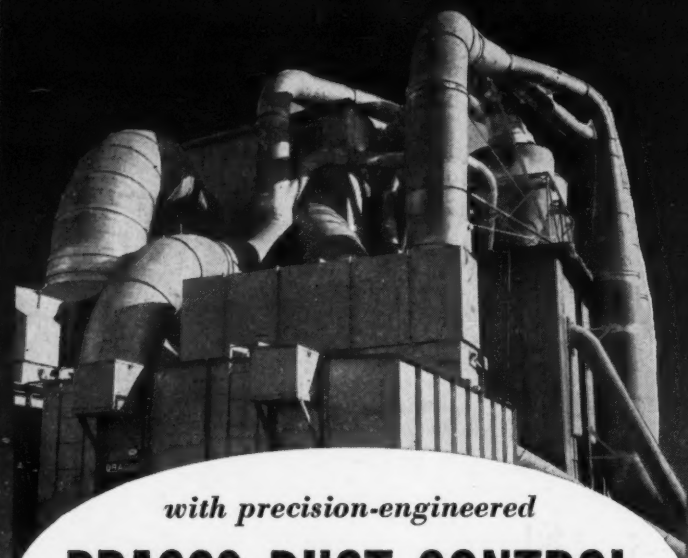
CORNING GLASS WORKS, Dept. CP-9, Corning, N.Y.
Please send me your new Pyrex Brand "DOUBLE-TOUGH"
Glass Pipe Catalog.

Name _____
Company _____
Address _____
City _____ Zone _____ State _____

When inquiring check CP 6444 on handy form, pgs. 2-3

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with precision-engineered
DRACCO DUST CONTROL
DESIGNED TO YOUR SPECIFIC REQUIREMENTS

Your plant may be one in which machine-damaging dust multiplies maintenance expense and increases production cost. Or it may be that you are wasting valuable basic materials in your manufacturing processes.

In either case DRACCO DUST CONTROL equipment will insure higher operating efficiency in your plant. Designed and constructed specifically to meet your requirements, DRACCO DUST CONTROL will remove all harmful dust and fumes from your plant buildings and recover valuable basic materials.

Thousands of existing DRACCO installations are constantly proving the value of DRACCO precision engineering and construction through their high-efficiency operation and low maintenance cost. DRACCO engineers, with over thirty-five years experience devoted exclusively to dust control, will be glad to analyze your problem and recommend proper equipment.

For further information phone or write DRACCO CORPORATION, 4063 E. 116th St., Cleveland 5, Ohio, or 415 Lexington Ave., New York 17, N.Y.

DRACCO

DUST CONTROL EQUIPMENT
PNEUMATIC CONVEYORS • METAL FABRICATION

IDEAS

**Fork truck hoisting speeds
can be easily increased . . .**

simple solution is to add a larger source of power, such as a bigger battery

Hoisting speeds of fork trucks may well be a critical consideration where large volumes of materials must be moved. Any method of saving time in these operations naturally results in savings. Often overlooked in time-studies is the fact that similar fork trucks can have different hoisting speeds.

In general, the limiting factor in hoisting speeds is the power source provided. Because the lifting speeds of battery-powered fork trucks are almost directly proportional to the impressed voltage for a given load, higher voltages will provide faster hoisting. Increases of 15 to 20% by this method are not uncommon.

However, this does not imply that it is always more economical to operate lifts at the highest possible speeds. In many installations, the present capacities of the fork trucks are equal to or even greater than the most critical needs. Naturally, in these cases it would not be sound practice to install larger batteries.

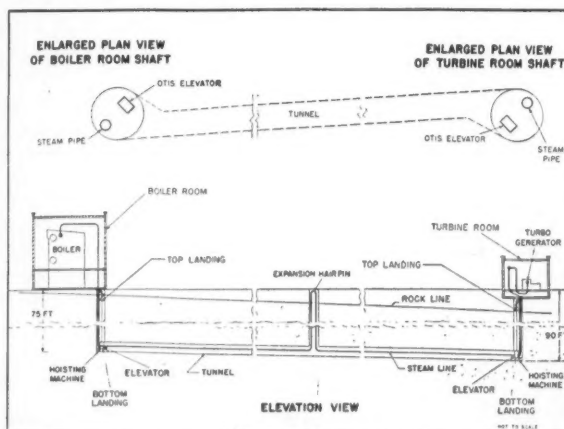
(Summarized from information provided by The Mercury Manufacturing Company, Dept. CP, 4044 S. Halsted St., Chicago 9, Ill.)

**Installation of small elevators
makes maintenance easier on
underground steam line . . .**

elevators located at opposite ends of 1300 ft tunnel between boiler and turbine rooms

Because of maintenance problem on a high-pressure underground steam line at the Argo, Ill., plant of the Corn Products Refining Co., two small elevators were installed to speed and simplify the carrying of workers and equipment down to the lower tunnel levels.

Tunnel has a 10' internal diameter and encases an 18" mineral-wool insulated steam pipe. At either end are vertical shafts, 10' in diameter which, because of the steam pipe, space for future second pipe, and access ladder, al-



Top and side views of elevator installations serving steam line

lowed room for only the smallest type elevator installation. Frequent inspection and repair operations are necessary on the pipe line, because daily temperature changes from 50 to 750°F cause a 54" expansion in the line.

Two 1200 lb capacity elevators were installed at each end

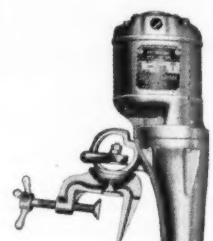
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PORTABLE MIXERS

- POWERFUL
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One Typhoon serves several tanks. Provides high efficiency agitation in a wide range of viscosities! Write for Mixer Book.



DIRECT DRIVE

For mixing, dissolving, and suspension of solids in liquids. For agitation of light and medium viscosity liquids. Can be mounted on any open tank or vessel.

GEARED DRIVE
For liquids of heavier type or of viscous nature. Handles products up to 4000 centipoises.



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The Patterson Foundry and Machine Company, (Canada) Limited

Toronto, Canada
MONTREAL

When inquiring check CP 6446 on handy form, pgs. 2-3

CHEMICAL PROCESSING

When inquiring check CP 6445 on handy form, pgs. 2-3

of the tunnel. They have a platform size of $3 \times 3\frac{1}{4}'$, and $4\frac{1}{4}$ hp geared motors (460 v at 60 cps) drive them at a speed of 100 fpm. Top-level landings for each elevator are 15' below ground level, and their hoistway machinery had to be fitted into a headroom of only 14' 6", also below ground. This arrangement was necessary because coal feeders and pulverizers occupied space over the boiler-house hoistway and turbine equipment was located in space over the engine-house.

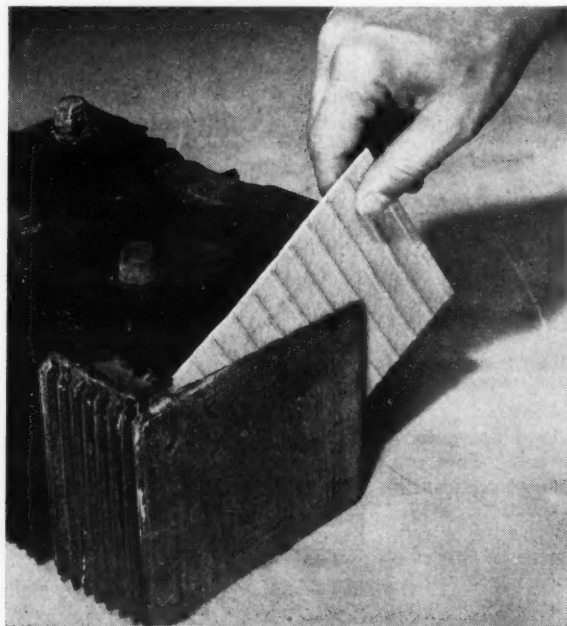
Stairways lead from basement level of each building to top elevator landings while bottom landings are platforms 3' 10" above the tunnel floor. It was found that use of the elevators by operating personnel going from one section to another did not interfere with the activities of maintenance workers. For this reason, tunnel has come into daily use serving both the maintenance function and as an all-weather passageway between power-station buildings.

(Otis Elevator Co., Dept. CP, Chicago, Ill.)

**Latex impregnated glass
lengthens shelf life
of battery . . .**

these separators are easier to install and last longer. Combination separator and retainer mat for use in lead-acid storage batteries is made of latex impregnated Fiberglas. It is currently in use by several battery manufacturers of automotive, truck and bus batteries.

Dow Latex 512K was chosen for its resistance to sulfuric acid. In addition, the resin bonds the glass fibers without making the separator too stiff. It is reported that the latex



Shows separator being inserted

does not cause plate corrosion, is 50% faster in installation regardless of humidity conditions, and that the finished battery may be stored indefinitely without separator deterioration.

(Latex made by The Dow Chemical Company, Midland, Mich., and the impregnated separators by Owens-Corning Fiberglas Corporation, Dept. CP, Toledo 1, Ohio.)

NEW from **GARLOCK**

Packings and Gaskets
made of

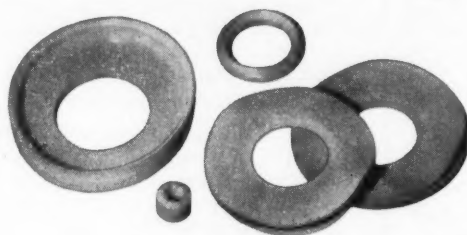
Teflon*

**The Packing and
Gasketing Material that**

**IS ENTIRELY UNAFFECTED BY ANY ACID,
ORGANIC SOLVENT OR ALKALI SOLUTION**



*Teflon is the Du Pont Company's trademark for tetrafluoroethylene resin.



GARLOCK 8764 . . . a rod, shaft or flange packing made of Teflon powder molded to required size and shape. Available in ring, sheet, gasket, tape, disc or cup form. Also used for making envelopes for gaskets.



GARLOCK 5733 . . . a "Lattice-Braid" rod or shaft packing made of Teflon filament. Supplied in coil or ring form.



GARLOCK 9166 . . . a plastic rod or shaft packing made of shredded Teflon. Supplied in coil or ring form.



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this new
Catalog!*

THE GARLOCK PACKING COMPANY, PALMYRA, NEW YORK
In Canada: The Garlock Packing Company of Canada Ltd., Toronto, Ont.

GARLOCK

When inquiring check CP 6447 on handy form, pgs. 2-3

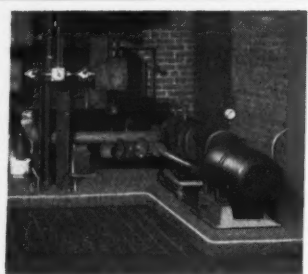


HOW TO PUMP



Pumping hot oil for industrial processes or in refinery applications is a specialty of KINNEY HELIQUAD HQ ROTARY PUMPS. Efficiency and durability — all important in this type of work — are the big recommendations for Kinney HQ Pumps. One Kinney HQ 8 x 4 Pump has been in hot oil service for over 12 years, delivering 190 g.p.m. and supplying 1,600,000 B.T.U. per hour . . . and it's still performing at full rated capacity! This is a typical case history for Kinney Pumps.

For most hot oil pumping jobs, we recommend cast steel HQ Pumps due to the shock temperature conditions



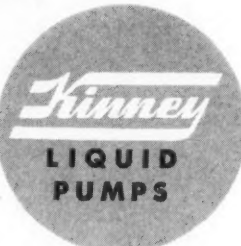
General Aniline Works Division of General Aniline & Film Corporation at Rensselaer, N. Y., employs this circulating oil heating system to process dye intermediates. The system depends on a Kinney Heliquad Pump to deliver oil at temperatures up to 300°F and pressures up to 100 psi to an oil-jacketed kettle. The complete installation is explosion-proof for safe handling of flammable solvents.

encountered. We offer a wide range of jacketed pumps, several sizes of which are listed in the table. Besides the operating temperature, our engineers will need to know the gravity and viscosity of the oil in order to recommend the right pump for your particular job. Be sure to specify whether the service is continuous or intermittent, and also what the suction and discharge pressures will be.

PUMP SIZE	HQA 6373	HQA 64573	HQA 8493
Pumping Temp. °F.	600	600	600
Absolute Viscosity in Poises	.005	.005	.005
Capacity GPM	90	140	180
Speed RPM	520	520	420
Differential Pressure	50	50	50

Other sizes are available.

Whatever your hot oil pumping problem, it will pay you to consult Kinney. Send coupon for new Liquid Pump Bulletin, KINNEY MANUFACTURING COMPANY, Boston 30, Mass. Representatives in New York, Chicago, Cleveland, Houston, New Orleans, Philadelphia, Los Angeles, San Francisco, Seattle, and foreign countries.



KINNEY MFG. COMPANY
3573 WASHINGTON ST., BOSTON 30, MASS.

Gentlemen: Please send me new Bulletin L51.
My liquid pumping problem involves:

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|------------------------------------|---|-----------------------------------|---|
| <input type="checkbox"/> Alcohol | <input type="checkbox"/> Lube, Diesel Oil, etc. | <input type="checkbox"/> Road Oil | <input type="checkbox"/> Solvents |
| <input type="checkbox"/> Asphalt | <input type="checkbox"/> Distillate | <input type="checkbox"/> Molasses | <input type="checkbox"/> Water |
| <input type="checkbox"/> Caustic | <input type="checkbox"/> Edible Oils | <input type="checkbox"/> Hot Oil | <input type="checkbox"/> Others (see letter attached) |
| <input type="checkbox"/> Crude Oil | <input type="checkbox"/> Fuel Oils | <input type="checkbox"/> Gasoline | |

Name _____ Company _____

Address _____

When inquiring check CB 6448 on handy form, pgs. 2-3

IDEAS

Uncovered hot lines, equipment constant fire, injury hazard . . .

700°F quickly ignites combustible materials; much lower temperatures also dangerous

Uninsulated, hot exposed surfaces are an imminent source of injury to workers and possible ignition of combustible materials. Safety and fire hazards are so great that use of insulation seems imperative, regardless of economic considerations.

Any surface at a temperature of above 700°F will quickly ignite most combustible materials which come in contact with it. Prolonged exposure to considerably lower temperatures may cause gradual charring and eventual ignition of wood, textile fibers and paper. Even the moderate temperature produced by low pressure steam pipes occasionally causes fires by promoting spontaneous ignition in oily waste, paint-soaked clothing or other materials with spontaneous heating tendencies.

An uninsulated metal exhaust stack from an oil-fired furnace, located in the storage room of a paperboard plant ignited a roll of paper accidentally piled against it and the resultant fire caused damage exceeding \$100,000.

In another instance, a bare pipe carrying 12 psi of steam passed through a rayon waste storage bin. Pipe caused charring and eventual ignition of the waste in contact with it. The fire spread to nearby bins and resulted in damage to the extent of \$9,000.

Safety orders issued by the State of California are typical of those of many other states. They provide, in part, that "exposed metallic surfaces having an external surface temperature sufficient to burn animal tissue, where subject to contact within 7' from the floor, or within 15" from stairways, ramps or fixed ladders shall be covered with thermal insulating material."

A final consideration is worker comfort, health and efficiency. Heat radiated from uninsulated surfaces increases workroom temperature to a level causing worker discomfort, in many cases, to a level that is not only enervating but a distinct health hazard.

(Magnesia Insulation Manufacturers Association, Dept. CP, Washington 4, D. C.)

Wrapping material saves time, eliminates degreasing by receiver . . .

metal parts in transit protected by treated paper rather than "packed in grease" method

Conventional methods of rust prevention in shipping and storing metal parts includes packing in grease. This, of course, necessitates degreasing the parts again before using. By impregnating a paper wrapper with a substance which inactivates moisture in the air, it has been possible to cut packing time and eliminate degreasing of metal parts needing protection from corrosion. The treated paper which is used in this connection is called Nox-Rust Vapor Wrapper.

The use of this wrapper leaves no deposit of any kind on the metal. Its action, rather, is confined to conditioning the air coming in contact with the part. These wrappers are being used by International Harvester for protecting machined parts. They are recommended for all types of steel and iron products and have been used on aircraft parts and business machines, among others.

(Product of Nox-Rust Chemical Corporation, Dept. CP, 2429 S. Halsted St., Chicago, Ill.)

Can your product be improved?

... the chemical industry is finding many new uses for improving manufacturing processes and products with Filtrol* Catalysts and Adsorbents. High uniformity and Adsorbents. High uniformity of quality and the ability to pinpoint adsorbent or catalyst specifications to specific product requirements assure optimum processing efficiency and economy.

Low cost and high performance have made Filtrol Catalysts and Filtrol Adsorbents the consistent first choice of the petroleum industry. Now, comparable results are being achieved in the chemical industry with the many grades of pelleted and powdered forms of Filtrol products.

Act now — perhaps your product or process can be improved with Filtrol Catalysts or Adsorbents. Write today for information concerning your specific applications and samples.



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* T. M. Reg. U. S. Pat. Off.

When inquiring check CP 6449
on handy form, pgs. 2-3

CHEMICAL PROCESSING

IDEAS

Gives properties of 20 tubing steels

Technical data on tubing for the petroleum, chemical, pulp and paper, and pharmaceutical industries is presented in eight-page bulletin. Included are analyses and tables of physical and mechanical properties as well as application data for 20 carbon, alloy and stainless tubing steels.

Applications mentioned are heat exchangers, condensers, boilers, conveying lines and structural or functional parts of processing equipment where temperature, pressure, sanitation, or corrosive environments are considerations. Bulletin TA 1559 is issued by The Babcock & Wilcox Tube Co., Dept. CP, Beaver Falls, Pa. When inquiring specify CP 6450 on handy form, pages 2 and 3.

Roasting ore tailings will beat shortage of sulfur . . .

plant to supply SO₂ equivalent of 9000 tons sulfur annually

A Dorr FluoSolids system for roasting iron sulfide concentrates will be installed at the Berlin, New Hampshire plant of Brown Company. These concentrates are actually tailings of copper ore prepared by floatation for Vermont Copper Company 100 miles away.

Pyrrhotite will be the chief source and the plant plans to use about 25,000 tons annually to produce the equivalent of 9,000 tons of sulfur as sulfur dioxide. The gas will be used at Brown's sulfite mill. The by-product iron (65% Fe) will be shipped out for cinderling and smelting.

(From Brown Company, Dept. CP, Berlin, N. H.)

Discusses different type diesel engines

Comprehensive bulletin describes six, eight, twelve and sixteen cylinder type diesel engines, along with their current uses for draglines and electric power generation in industrial plants. Complete engineering data, specifications and power ratings are included. Bul FV-63 is issued by The Cooper-Bessemer Corp., Dept. CP, Mount Vernon, Ohio. When inquiring specify CP 6451 on handy form, pages 2 and 3.

For more information on product advertised at right, specify CP 6452 . . . see information request blank between pages 2-3.



At the BS&B factory...applying pressure until disc rupture occurs, to check actual rupture pressure against rated pressure of each disc.



Money Can't Buy A Complete Lot!



...because a generous, scientific sample of SAFETY HEAD discs is ruptured at the factory to assure you of precision pressure protection. This is only one of many checks developed through BS&B's long experience in the exclusive manufacture of these versatile over-pressure relief devices. You can rely on SAFETY HEADS for instant, accurate action when needed!

No other relief device acts as quickly... full pipe-size opening afforded after disc rupture. If you have equipment under pressure, you need SAFETY HEADS!

Write today for free catalog, complete details. Ask about a free analysis of your pressure problem by a BS&B Engineer.

BLACK, SIVALLS & BRYSON, INC.
Adv. Dept. Rm. 25M 7502 East 12th Street
Kansas City 3, Missouri



SAFETY HEADS
for
Positive Pressure Protection

IDEAS

Silicone-base finish stops corrosion of mufflers...

Exhaust mufflers on diesel trucks are hard to keep in shape because of the severely corrosive conditions they experience. They handle hot gases containing moisture and acids. Ordinary truck and automotive mufflers have been less of a problem because they are out of sight, and so long as they continue to function the corrosion does not matter. Diesel mufflers, on the other hand, are plainly visible and must be kept in sightly condition.

Autocar, builder of diesel trucks, has started to use Sicon for protecting these mufflers. Sicon is a silicone-base finish produced by the Midland Industrial Finishes Company. Reports of tests show that corrosion was stopped and the aluminum finish imparted by Sicon did not discolor.

(Midland Industrial Finishes Company, Dept. CP, Waukegan, Ill.)

Data on molding powder formulation

Technical book describes the properties and uses of molding powders. Data based on ASTM tests are provided for four formulations of cellulose acetate molding powder and five formulations of ethyl cellulose molding powder, each in a number of flow types. Typical uses of the products in personal goods, housewares, tools, safety equipment, textile bobbins, and sporting goods are shown in product photographs of these applications. "Hercocel Molding Powders" is issued by the Hercules Powder Company, Inc., Dept. CP, Wilmington, Delaware. When inquiring specify CP 6453 on handy form, pages 2 and 3.

Mineral wool to be certified as standard...

only grades meeting NBS standard will be approved for label

Industrial Mineral Wool Institute has launched a program of industry-wide certification of mineral wool products. The program is designed to assure standard quality and protect industrial users. Each carton or section of insulation manufactured by the institute's member companies will carry a label certifying that its properties exceed minimum requirements stated by NBS.

Loose, granulated, felt, blanket, industrial batt, block or board insulation, and molded pipe coverings and

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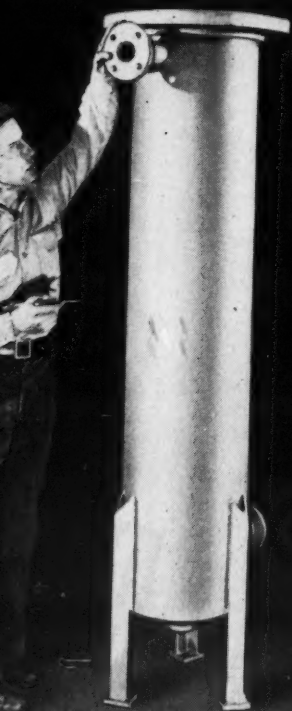
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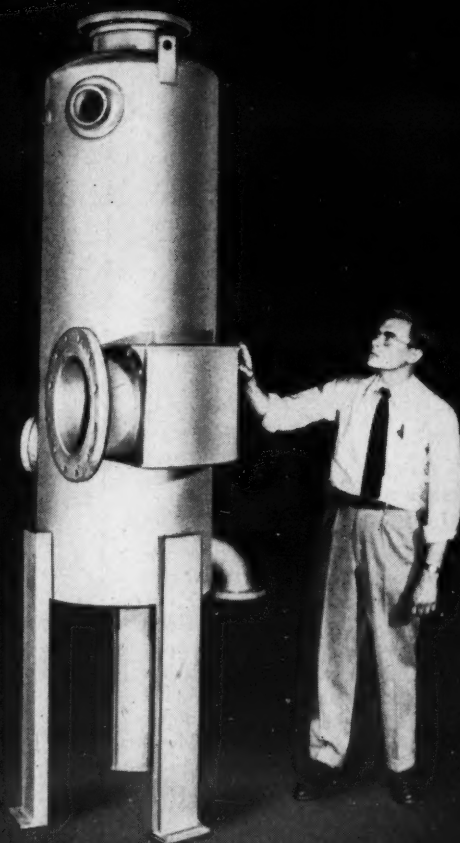
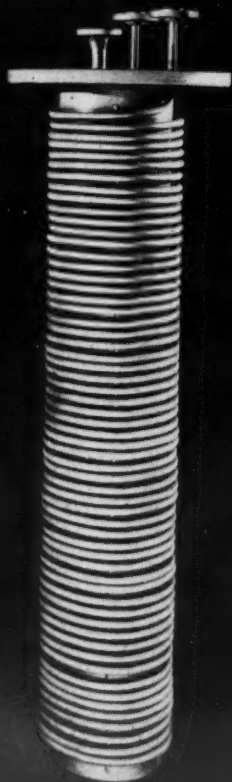
AMPCO*

ALUMINUM BRONZES

Conveyor Screws



Heat Exchangers



Centrifugal Separators

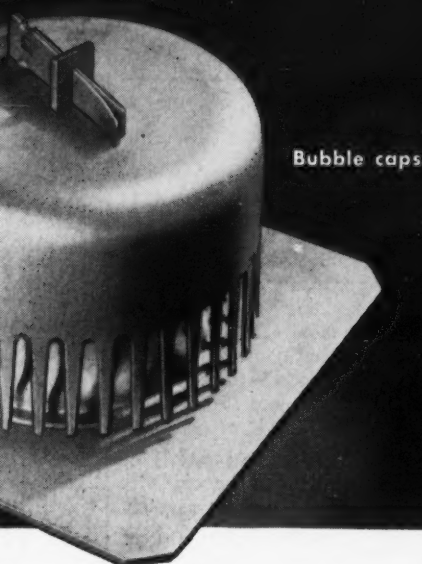


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Ampco Metal
bronze alloy
It is approved
pressure vessels
paragraphs U
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*Reg. U. S. Pat. Off.

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AMPCO



Bubble caps

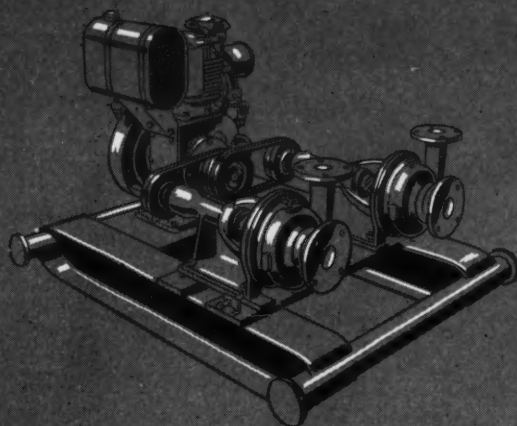
n answer corrosion problems!

Boiler Code Approval

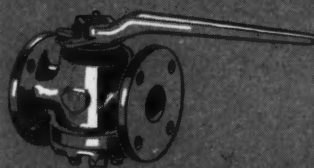
Metal Grade 8 is an annealed alpha aluminum-alloy conforming to ASTM B-169-50T Alloy D. Approved for use in the construction of unfired vessels. See your Boiler Code Handbook — U-68 and U-69 as interpreted in case No. for complete details.

*Tear out this coupon
and mail today!*

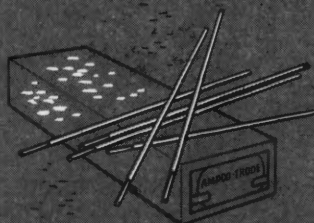
Ampco Metal, Inc.
Milwaukee 46, Wisconsin
West Coast Plant,
Burbank, California



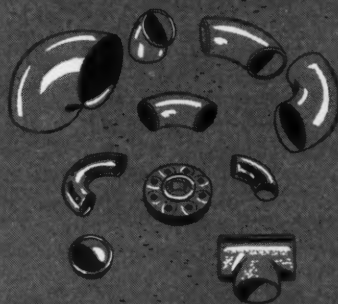
Ampco Centrifugal Pumps



Ampco Plug Valves



Ampco Bronze Electrodes



Ampco Pipe Fittings

AMPCO METAL, INC., Dept. CP-9, Milwaukee 46, Wis.

Send me information on the application of Ampco Aluminum Bronzes for corrosion-resistant service in the Process Industries.

Name.....Title.....

Company.....

Company Address.....

City.....(.....) State.....

IDEAS

cements will fall under this program. Each standard covers definitions, materials, thickness, and temperature recommendations. The tests made will probe thermal conductivity, temperature resistance, density, combustibility, moisture adsorption, and corrosion resistance. Tests will be made by an impartial laboratory selected by the board of directors of the Institute.

(Summarized from announcement of certification program of the Industrial Mineral Wool Institute, Dept. CP, 441 Lexington Ave., New York 17, N. Y.)

Shows how to service industrial truck

Illustrated, 14-page bulletin outlines, with the aid of 51 photographs, a complete program of preventive maintenance for industrial trucks. With the idea that it costs much less to prevent industrial truck failures, this publication shows a step-by-step method of inspection, care and repair.

Some idea of its practical approach may be had by the first step of the process. Here, the bulletin recommends a thorough cleaning because a maintenance man usually does not do his best work if he has to work on dirty or greasy trucks. Bulletin 2100 is issued by The Baker Industrial Truck Div., The Baker-Raulang Co., Dept. CP, 1250 W. 80th St., Cleveland 2, Ohio. When inquiring specify CP 6454 on handy form, pages 2 and 3.

Replacement alloy saves nickel...

uses about half as much as comparable metals

In order to conserve nickel during the current period of emergency, The International Nickel Company is putting Incoloy into service. It is an alloy which may be used under conditions of high temperature and corrosion. Containing about 35% nickel (as opposed to more than 70% in some comparable alloys), Incoloy uses 20% chromium with the balance being iron.

(Information from Nickel Information Service, The International Nickel Company, Dept. CP, 67 Wall St., New York 5, N. Y. . . . or for more information check CP 6455 on handy form, pages 2 and 3.)

For more information on product at left, specify CP 6456 . . . see information request blank between pages 2-3.

for SAFE, SURE SERVICE SPECIFY CHIKSAN



Standard Swivel Joints.
For pressures from
125 psi. to 15,000 psi.



**High Temperature Swivel
Joints.** For temperatures
to 500°F. M.W.P. 700 psi.



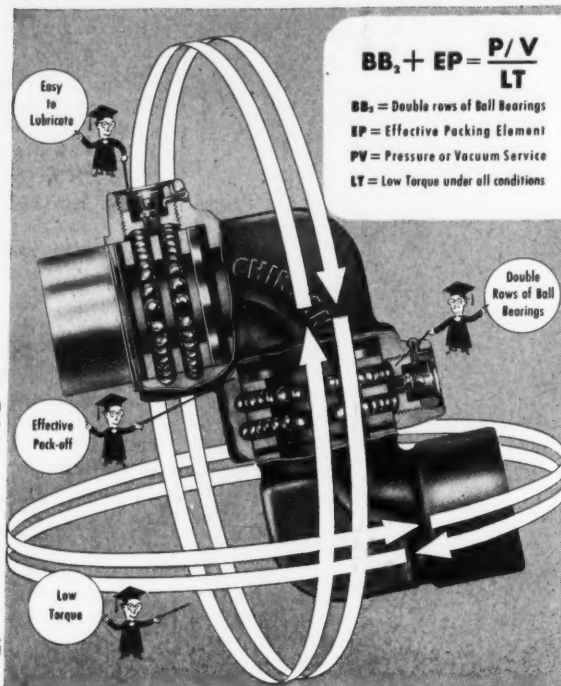
Rotating Joints. For 150-lb.
steam, brine, etc. Adapted
for siphon return line.



Sanitary Swivel Joints.
For Food Processing,
Dairies, Bottlers, etc.



**Hydraulic Swivel
Joints.** For pressures
to 3,000 psi.



$$BB_2 + EP = \frac{P/V}{LT}$$

BB₂ = Double rows of Ball Bearings
EP = Effective Packing Element
PV = Pressure or Vacuum Service
LT = Low Torque under all conditions

For over a quarter-century, here at CHIKSAN, we have specialized *exclusively* on developing and designing Swivel Joints* for all purposes... on manufacturing them to our rigid standards of precision... and on following through in the field to check performance under all sorts of conditions. That's why there is no substitute for CHIKSAN Ball-Bearing Swivel Joints* when it comes to efficient service with maximum safety... longest life... and minimum maintenance.

It costs you nothing to take full advantage of CHIKSAN's specialized experience. CHIKSAN Engineers will gladly cooperate with you in designing flexible lines to meet your specific requirements.

WRITE FOR CATALOG NO. 50-C. REPRESENTATIVES IN PRINCIPAL CITIES—SOLD BY LEADING SUPPLY STORES EVERYWHERE

*For full 360° rotation in 1, 2 and 3 planes. Unlimited flexibility in pipe lines is secured merely by arranging swivels in proper sequence. Over 500 different Types, Styles and Sizes for pressures to 15,000 psi; temperatures to 500°F.; pipe sizes from 3/8" to 12" and larger.

CHIKSAN COMPANY

AND SUBSIDIARY COMPANIES

Chicago 3, Ill. BREA, CALIFORNIA Newark 2, N. J.

WELL EQUIPMENT MFG. CORP. HOUSTON 1, TEXAS

CHIKSAN EXPORT CO. BREA, CALIFORNIA NEWARK 2, N. J.

BALL-BEARING SWIVEL JOINTS FOR ALL PURPOSES

When inquiring check CP 6457 on handy form, pgs. 2-3

IDEAS

Tablet form of catalysts offers advantages over irregular mass forms...

presses with tableting rates to 4000/min yield catalysts of uniform size, shape, density, texture

Catalysts and catalyst supports in tablet form are offering many advantages to chemical processors over irregular mass types previously employed. Small and uniform particles can control reaction speed more critically, as well as provide improved surface-to-mass ratio often necessary in many catalytic reactions. Tablets in the form of fine material are superior for tower packing and offer higher resistance to crushing and erosion.

Since almost all catalysts are either elemental metals or their oxides, it is not always possible for the oxide to adhere to the parent metal and form a powder as such. This necessitates forming them into some shape, as a tablet.

Preparation of catalysts in tablet form is being accomplished on tableting presses in the same manner as the production of aspirin for the pharmaceutical industry. Tableting rates of 4000/min yield catalysts of uniform size, shape, density, and surface texture.

(Tableting presses for catalysts are produced by the F. J. Stokes Machine Company, Dept. CP, Philadelphia, Pa.)

Process speeds cold working, cold extrusion of steel...

chemical treatment produces heat-resistant lubricating surface that adheres under severe working

A recently developed metal-treating process is bringing about significant economies in cold working of steels. In plants where the process has been put to the test it has accomplished one or more of the following: eliminated intermediate press, annealing and chemical treating operations; reduced consumption of chemicals; increased production of existing equipment; conserved metal and reduced scrap losses; and lengthened life of costly dies considerably.

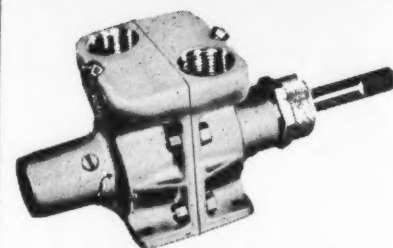
Heart of the Foscoat Process is a specially formulated phosphate coating—Foscoat—which can be applied by immersion, flooding or spraying, and forms a strong, adherent coating chemically bonded to the steel. This highly adsorbent coating functions as a host for Fosslube, an organic lubricant which reacts chemically with Foscoat in addition to being physically adsorbed and absorbed. Result is a heat-resistant surface, interlocked with the metal and having exceptional adherence even under the most severe working conditions.

Since proper precleaning and preparation of the surface is of high importance, the complete process was worked out to include pickling and special alkaline cleaners, designated as Fosclean products. Thus, a complete, integrated process is supplied, including layout and equipment design as well as mechanical engineering service on tool and die design. Heintz Manufacturing Company of Philadelphia, co-developer of the process, cooperate in the latter phases of this technical service.

Commercial application of the process in one case (wet drawing of fine steel wire) has upped production 40% and, at the same time, increased die life 2 1/2 times. In dry drawing of steel wire shapes, application of the process permitted drawing to finished shape without intermediate anneals and recoating. In fabrication of automatic washing machine tubs, reduction in rejects and

ECO SELF-PRIMING PUMPS

HAVE NO EQUAL
for **DEPENDABLE**
SMALL VOLUME
PROCESS or
LABORATORY WORK



**SELF-PRIMING MULTI-PURPOSE
STAINLESS STEEL PUMPS,**
eliminate Aeration, Foaming and
PREVENT CORROSION.

ECO GEARLESS PUMPS have been found ideally suited for the conveyance of: Deionized Water, Colloidal Emulsions, Resinous, Starch, Wax Detergents, Petroleum Base & other Viscous Sizing, for the Paper & Textile Industries. Water Treatment Chemicals, Silicate of Soda etc. Dyes, Processing Oils & Chemicals for the Metal, Paper & Textile Industries, Glues, Organic & Synthetic. Rubber Latexes, Textile Impregnations. Plating Solutions, Degreasing Solutions. Soaps & Cosmetic Creams. Corrosive Liquors & Filtrates.

PUMP HOUSING: Fully machined, Non-porous # 316 Stainless Steel Precision Castings or Naval Bronze Forgings.

CAPACITIES: 1 to 20.7 G.P.M.

PRESSURES: 0 to 150 P.S.I.

SPEEDS: 600 to 3450 RPM

atings Subjected to Viscosity and Temperature

PUMP PORTS: 3/8", 1/2", 3/4" Pipe Tap
BEARINGS: Self Lubricating Graphitar
IMPELLERS: Synthetic Rubber or Mica

Available with Motor Unit, and Ball Bearing Pulley for Belt Drive.

SEND FOR ECO PUMP BULLETIN C-4

• See THE ECO DISPLAY BOOTH # 641
CHEMICAL IND. EXPOSITION — NOV. 26, DEC. 1 •

ECO ENGINEERING CO.
12 NEW YORK AVENUE NEWARK 1, N. J.

Manufacturers of Precision
Engineered Small Capacity
Positive Displacement Pumps

When inquiring check CP 6458
on handy form, pgs. 2-3

CHEMICAL PROCESSING

down-time for stoning of dies resulted in a production increase of 140%. In deep drawing (ironing) of steel cartridge cases, 80% reductions in wall thickness of the metal were possible with a single application of the process, without intermediate annealing.

Process has been successfully employed in conjunction with all grades of plain carbon and SAE alloy steels as well as some medium alloy grades. It is not intended, in its present state of development, for use with stainless and other high alloy steels.

Efficiency of process has been successfully demonstrated in cold extrusion and therefore brings this fabricating technique one step nearer to general commercial use.

(Pennsylvania Salt Mfg. Co., Dept. CP, 1000 Widener Bldg., Philadelphia 7, Pa., cooperated in development of the Foscoat Process.)

Plant for new acrylic fiber slated for full production next year . . .

will make 30,000,000 lb/yr of synthetic for outdoor and industrial fabrics, wearing apparel

Chemstrand Corporation is building a plant in Decatur, Ala., for production of 30,000,000 lb/yr of Acrilan, the corporation's new acrylic synthetic fiber. Full production at the plant will be under way sometime next year. Pilot-plant quantities, for developmental work, are now being made at Marcus Hook, Pa. The fiber, according to Chemstrand, can be used in outdoor fabrics, wearing apparel, and industrial applications such as acid-resistant work clothes, sewing thread, cordage and filter fabrics.

Acrilan is made from polyacrylonitrile, and is being produced as a staple. Special properties reported are: excellent resistance to outdoor deterioration, excellent dimensional stability, good resistance to abrasion and stretch. Fabrics are quick-drying, warm to the touch, and moth-resistant. Acrilan can be processed in standard textile operations, and can be dyed in a broad range of colors.

(The Chemstrand Corporation, Dept. CP, 1617 Pennsylvania Blvd., Philadelphia, Pa.)

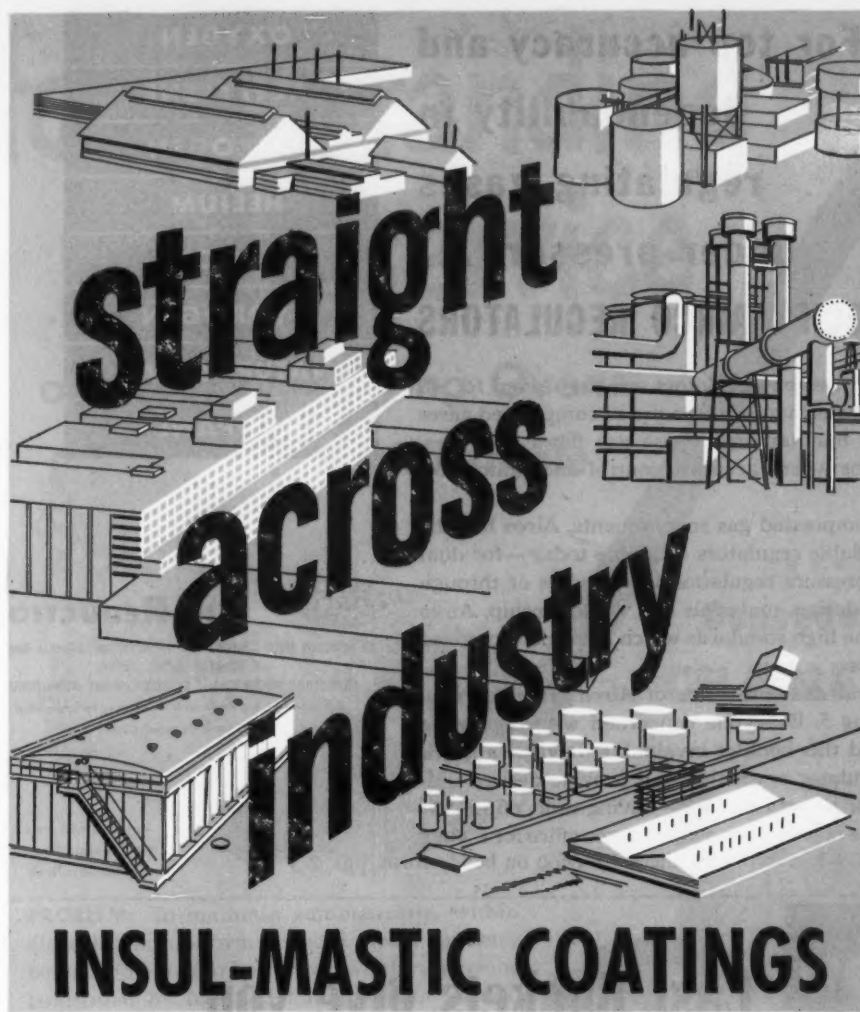
Streamlining valve cuts size, weight while reducing pressure drop . . .

high velocity air tests cited as evidence of improved valve design

A specially designed testing unit, built by the valve manufacturer, is in use testing various valve designs. In comparing two valves, a stream of high velocity air is passed through them and the respective pressure drops noted.

This set-up has shown a very notable difference in the pressure drop through valves of conventional design and valves specially engineered for low resistance to flow. The Edward Streamlined valve, in addition to causing a much lower pressure drop, is smaller and lighter than conventional valves of the same capacity. These differences are due to the shape of the internal surface. In the streamlined valve a greater sweep has been given to the in-flow arm, the piston rises higher, and a greater open port has been left above the seat on the out-flow side. The general effect of this has been to reduce turbulence and static pressure.

(News received from Edward Valves, Inc., Subsidiary of Rockwell Mfg. Co., Dept. CP, East Chicago, Ind.)



SIGNIFY *Simplicity*

Insul-Mastic is the simple, practical coating for corrosion prevention, insulation, moisture and vaporsealing. Here is *lasting* protection without complicated or multi-coat application methods. One coat quickly sprayed onto a clean dry surface gives you a heavy barrier against weather and chemical attack. Insul-Mastic's simplicity means economy for you.

Insul-Mastic is top quality protection against acids, alkalis, moisture-vapor and other corrosive agents. Masonry and insulation can also be protected from moisture by this Insul-Mastic seal. Insul-Mastic Type "D" offers thermal insulation (-40° to 300° F.) as well as protection.

Write for complete information and the name of our nearest representative.

Think first of the coatings that last!

Insul-Mastic Corporation OF AMERICA

1165 OLIVER BUILDING · PITTSBURGH 22, PA.
Representatives in Principal Cities

When inquiring check CP 6459 on handy form, pgs. 2-3



NO SPECIAL PREPARATION

A clean dry surface—a primer maybe—but no special preparation for Insul-Mastic.



NO MIXING

Insul-Mastic is homogenized. Solvents don't separate from the coating.



NO HEATING

Insul-Mastic coatings are sprayed just as they come from the drums.



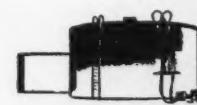
SPRAY APPLICATION

No specialized application methods are needed for Insul-Mastic coatings.



NO HARM TO WORKMEN

Fumes do not burn eyes or skin.



ONE COAT APPLICATION

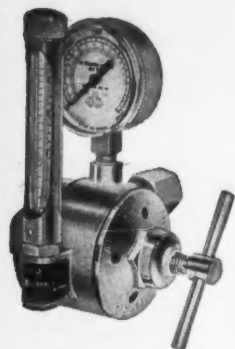
One coat of Insul-Mastic is sufficient for lasting protection.



NO SPECIAL CURING METHODS NEEDED

Spray Insul-Mastic and leave it.





Airco Style 8461 — a dual-stage metering regulator which indicates actual flow — ideal for laboratory analysis and industrial processing.

For top accuracy and dependability in regulating gases under pressure...

SPECIFY AIRCO REGULATORS

Airco pressure regulators are engineered for all operations involving the use of compressed gases ... for maintaining precise gas flows and pressures in laboratory operations where accurate control and uniformity is a "must".

For these, and all other compressed gas requirements, Airco has the most complete line of dependable regulators available today — for dual or single stage, high or low pressure regulation in cylinders or through manifolds and pipe lines. In design, materials and workmanship, Airco regulators conform to the same high standards which have characterized all Airco products for decades.

For more information about the entire line of Airco pressure regulators, write for Airco Catalog 5. Everyone concerned with regulating gases under pressure will find this booklet invaluable. It gives a quick "reason why" one type of regulator or another will provide desired uniform pressures, at less cost, for a particular job — saving time, effort and needless waste of money. Write now to your nearest Airco office for a copy.

When inquiring check CP 6460 on handy form, pgs. 2-3

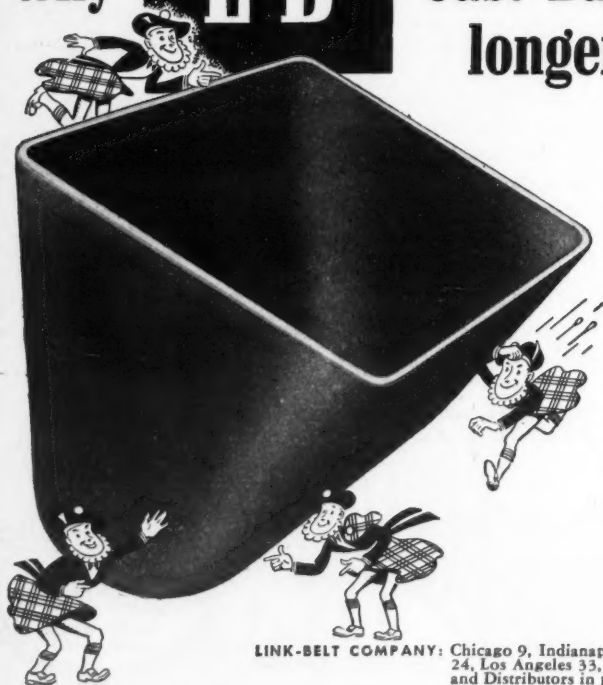
OXYGEN
ACETYLENE
NITROGEN
HELIUM
ARGON
HYDROGEN
NATURAL GAS
PROPANE



AIR REDUCTION

AIR REDUCTION SALES COMPANY • AIR REDUCTION MAGNOLIA COMPANY
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REPRESENTED INTERNATIONALLY BY AIRCO COMPANY INTERNATIONAL
Divisions of Air Reduction Company, Incorporated
Offices in Principal Cities

why "L-B" Cast Buckets give you longer life, cleaner handling



NEXT time you replace the buckets on your elevators, check into the money-saving advantages of Link-Belt Cast Buckets. You'll find their accurate balance and advanced design pay off in proper filling, clean discharge.

For a long, durable life — they're made of top-grade malleable iron or Promal (the stronger, longer-wearing metal) to resist abrasion, corrosion and hard usage. Smooth, seamless surface minimizes friction and wear. Corners are reinforced to give added strength.

Link-Belt builds all sizes in six different styles ... for either chain or belt mounting. Complete L-B line also includes steel buckets of various designs. Contact your nearest Link-Belt office for complete information.

LINK-BELT
CAST ELEVATOR BUCKETS

LINK-BELT COMPANY: Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8, Springs (South Africa). Offices, Factory Branch Stores and Distributors in principal cities.

When inquiring check CP 6461 on handy form, pgs. 2-3

IDEAS

Stalin hopes we will destroy America — comic book tells how . . .

puts spotlight on inflation and explains it so that the average worker understands

When officials of Bemis Brothers Bag Company started their current program of informing their employees about problems demanding public action, they consulted Gardner Advertising Company, their agency, as to the best way of doing it. Bemis was convinced that much of the "American Way" advertising failed to reach the desired audience. The advertising company recommended comic books as the most effective way of promoting the program stressing freedom of the individual.

First of a series of comic books resulting from the scheme is: "How Stalin Hopes We Will Destroy America." Though it deals with fundamental economic principles, the 16-page, full-color booklet is written in a style which is appealing and understandable. Initial success among 10,000 Bemis employees was shown by their enthusiastic response. Test indicated that workers exposed to the booklet had a significantly higher appreciation of ways to stop inflation than workers who had not seen it.

Since a survey has revealed that relatively few employers in this country have effective employee programs dealing with free enterprise, the American way of life, and related subjects, this comic book program will be continued. Future books dealing with productivity, personal economic freedom, and controlled economy are being made available. Pictorial Media, Inc., handling the program, will furnish copies of the books for distribution.

The particular value of the program is that small and medium sized businesses have the chance to use this excellent medium at a cost lowered by the large scale printings. In line with this, Bemis is engaging in a national advertising campaign with the hope that through participation of the employer, the American public can be shown what needs to be done.

(Single copies of the inflation booklet will be sent free. Inquiries about quantity lots, or about future booklets should be addressed to Pictorial Media, Inc., Dept. CP, 205 East 42nd St., New York 17, N.Y.)

Human Element in Research

(Continued from page 4)

get a favorable reception from management and others that have to deal with it.

For example, a new product which falls into the same category as others with which the organization is familiar and is accustomed to handle will encounter much less resistance than one which is entirely outside the scope of its experience. In the latter case many questions must be anticipated, discussed and answered satisfactorily before acceptance can be expected. Such questions may be: does it fit into the overall objectives of the company; will it conflict with or support the sales of present products; can it be manufactured in plant equipment and in the general localities now used by the company; can it be appraised, directed and serviced by the skills now available in the organization; are the financial risks within those normally assumed by the company.

Answers to these questions should not only be prepared, they should be discussed and favorably received by the organization far ahead of the time when marketing and production phases are at hand. If the nature of the

CHEMICAL PROCESSING

IDEAS

development requires special skills and separate management, the nature of the requirements and means of selection of the personnel should be agreed upon well in advance of the needed action.

Such foresight will not only disclose many unconsidered problems, but it will have a valuable psychological effect. It tends to dissipate the natural human opposition to the new and relatively unknown and secures, instead, a cooperative interest in the solution of a common problem. This is especially valuable when the job is under way and inevitable difficulties arise. There is then a feeling of mutual responsibility and interest in overcoming the obstacles.

Insufficient preparatory research may prove fatal to a project. Every research manager has had the experience of reporting a timely and favorable result, which was swept out of his hands and into production by an over-enthusiastic management. There is a nice balance to be struck between the need for creating interest and familiarity with a research project as it progresses and the detonation of premature commercial action. The experienced research director will point out the further steps which must be taken to prepare for commercial exploitation, even as he reports the favorable progress of his project.

If a new division is required to produce and market the new product, it is highly important that the manager and his key men be proficient in inspiring the group with enthusiasm for the project, belief in its ultimate success, and the mutual confidence which constitutes the basis for successful teamwork. It is impossible to lay down a few hard and fast rules. The very nature of the operation requires constant adaptation, modification and correction until there is a reasonable balance between the method of production, the cost, the sales approach and the customer demand. Each of these is usually in a state of flux and sensitive to the changes in the rest.

The importance of cooperation which is both broad and deep cannot be overemphasized. By broad I mean all the way across the business, including the customer; by deep I mean from the top of the organization down to the individual workman, technician or salesman. There can be no fixed attitude adopted by Production, for example, as is frequently expressed by the admonition to Sales, "This is the product we are going to make. Go out and sell it." Nor, conversely, can Sales say arbitrarily, "If we are going to make a profit, we must have such and such (different) kind of product at this (lower) cost." The best decision is usually a compromise that is given solid support by all.

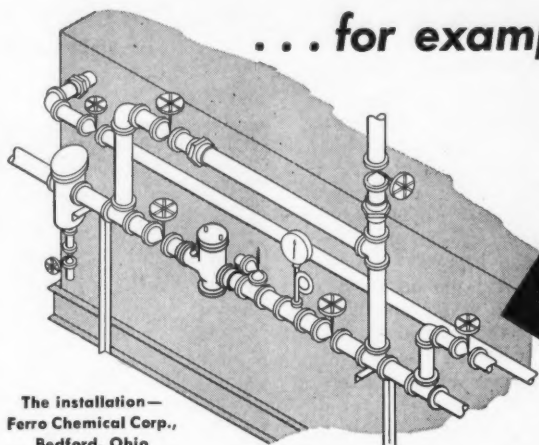
Customer cooperation is of great importance, especially when his first trial of your product is not satisfactory. A cooperative customer will try it again with modification in product or conditions, often with one of your men witnessing the trial firsthand.

Cooperation is best between two men who feel friendly and at ease with each other. Hence, it is important to select a man for customer contact who can provide the basis for mutual friendship. Remember that a customer's confidence is favorably affected and his cooperation frequently secured when he finds your own organization working closely and harmoniously together.

for outstanding service

on Steam to Drying Ovens

... for example



The installation—
Ferro Chemical Corp.,
Bedford, Ohio

PROBLEM: To maintain automatically, within close limits, uniform reduced steam pressure from supply line to battery of two drying ovens controlled by individual thermostatic valves.

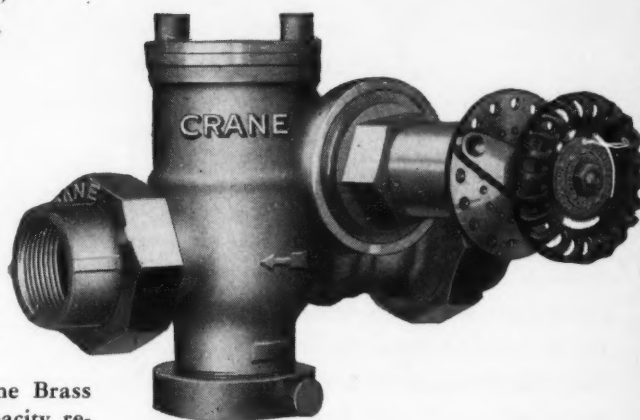
WORKING CONDITIONS: Initial steam pressure of 70 psi to be reduced to 13 psi, and maintained without significant fluctuation whether one, both, or neither of the ovens is being operated.

SOLUTION TO PROBLEM: One No. 960 Crane Brass Pressure Regulator, properly selected for capacity required, and with adequate condensate drainage provided.

RESULT: For more than 5 years, without interruption and with no more than routine maintenance, the Crane No. 960 Regulator has given complete satisfaction. Operating like new, and since all wearing parts are renewable, it will virtually never wear out. User remarks on unusual simplicity of adjustment.

Another typical case history, demonstrating the bigger value and lower ultimate cost of Crane Quality Valves. And why...
More CRANE VALVES are used than any other make!

... Install
Dependable Quality
CRANE VALVES



No. 960 Crane Brass Pressure Regulator
for steam or air. Literature on request through
your Crane Branch or Crane Wholesaler.

CRANE CO.

VALVES • FITTINGS • PIPE • PLUMBING • HEATING

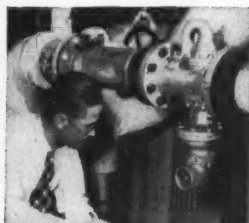
General Offices:
836 S. Michigan Ave., Chicago 5, Ill.
Branches and Wholesalers Serving
All Industrial Areas

When inquiring check CP 6462 on handy form, pgs. 2-3



BUILDERS SHUNTFLO STEAM METER keeps a

complete, up-to-the-minute check on every pound of steam passing through the pipeline. The direct-reading totalizer is driven by the flow through the line and registers steam consumption in pounds or cubic feet — accurate with $\pm 2\%$ over most of its range. Self-contained and self-operated, Builders Shuntflo is as easy to install as a valve or fitting. Find out for yourself why so many industries, district heating companies, and public utilities use Builders Shuntflo Steam Meters. Model SMKS for 2" to 14" lines. Model SMDH for 1" and 1½" lines. For Bulletin 400-F1 and complete information, address Builders-Providence, Inc. (Division of Builders Iron Foundry), 387 Harris Ave., Providence 1, Rhode Island.



BUILDERS makes a complete line of flow meters and controllers for liquids, steam, air, gas, and dry materials . . . mechanical and differential . . . including The Venturi Meter and Chlorinizers (chlorine gas feeders).



BUILDERS-PROVIDENCE



When inquiring check CP 6463 on handy form, pgs. 2-3

Page 66

Projection Screen of Metallograph Eases Extended Examinations for Dirt Counts or Grain Size Determinations

**Screen is only one of many features
that simplify and improve operation
of this useful instrument**

USES: For determination of the crystalline structure, composition, grain size, and non-metallic inclusion content of metals.

Features: Compact and well-arranged operating zone; centerable, rotatable, ball-bearing stage; stage elevator for fast objective interchange without tedious refocusing; simple interchange between binocular body and monocular tube; filters in swing mounts usable in combinations or singly with all illuminators; four types of illumination; and selector switch for directing image to microscope, projection screen, or camera.

Description: All vital controls are arranged so that the zone of operation is a narrow, vertical area directly in front of the operator. The most distinctive feature of this instrument is the viewing screen, located directly in the line of vision.

This screen shows the same field as individual eyepieces or the ground glass of the camera. With device, extended examinations for dirt counts or grain size determination is rapidly made without fatigue. In addition, simultaneous viewing by several people is possible, thus saving time and offering the benefits of consultation. Eyepieces, the same used in the microscope, are interchangeable on the screen so that magnification can be freely varied. Viewing in usual room illumination is reported to be excellent.

Focusing index indicates direction and distance from the median of the focusing range. The drum is graduated in single microns from 0 to 100. A time-saving feature is the elimination of coarse focusing, made possible by the accurate parfocality of the objectives.

Inter-pupillary adjustment from 50 to 75 mm and separate eye correction are provided on the binocular body, which is far more satisfactory than the monocular tube for routine use. However, the monocular tube is preferable for measuring techniques. Available for the tube are a micrometer eyepiece and a grain size measuring eyepiece. The latter is a 7.5X Hyperplane type into which is built a revolving circular plate containing 8 glass micrometer discs with ruled squares representing various numbers of grains per inch on the magnified image.

A centerable, ball-bearing stage, rotatable through 360°, mounts the heavy-duty mechanical stage. The latter has a



Metallograph has many useful features. Photo shows use of projection screen which eases extended examinations, permits simultaneous observation by several

one-inch coordinating movement with the convenience of dual control knobs, ample graduations, and verniers. A friction spring clamp can be used to hold the specimen. Stage-elevating device is actuated by lever; a half-swing raises the stage to permit easy and rapid change of objectives.

Lever returns the stage and its dynamically balanced support to the proper parfocal position above the objective. Optical alignment is not affected. To prevent jar, a piston and cylinder provide an air cushion which gently stops the downward travel.

Photomicrography is accomplished with a conventional 25" bellows draw 5 x 7" camera, which permits any magnification from 25X to 2000X. A scale graduated in 0.1" steps facilitates use of magnification tables. The shutter has provision for

quick setting of exposure speed from 1/50 to 1/2 second plus Bulb and Time. Focusing screen with clear glass center and a standard double plate holder are supplied.

Standard eyepieces are used for the camera and are quickly interchanged by means of the sliding light-tight connector between camera and microscope. At the camera's back is a direct-drive remote fine focusing adjustment with a 2:1 ratio, assuring precise focusing for any bellows extension.

Four types of illumination assure comprehensive analysis of difficult specimens: bright field, dark field, polarized light, and phase contrast. Change from one to another is rapid and convenient. Available phase contrast accessories are quickly attached and use standard objectives. In addition, half aperture and oblique lighting are provided. Particularly in a bright field, both of these types of illumination are convenient means of examination of certain types of specimens where maximum resolution is secondary to increased intensity, depth perception, and contrast. Aperture and field diaphragms are graduated for repeat examinations and recording data.

Interference as well as neutral density filters can be used individually or in combinations. Interference filters with peak transmissions in the green and blue regions provide maximum contrast for both visual and photographic work. These fit into swinging mounts and can be used with all

CHEMICAL PROCESSING

available light sources: motor-driven self-regulating carbon arc; ribbon filament lamp; and zirconium oxide incandescent arc lamp. Ribbon filament lamp, however, does not produce enough intensity to give satisfactory results with the viewing screen.

A complete line of accessory equipment and measuring devices is available for this instrument; component units of the assembly are also available. Full details are contained in manufacturer's Catalog E-232.

Source: Balphot Metallograph is manufactured by Bausch & Lomb Optical Co., Dept. CP, Rochester 2, N. Y. . . . or for more information check CP 6464 on handy form, pages 2 and 3.

**Care needed for correct results
with direct colorimetric titration
of water hardness . . .**

hardness picked up from filter papers and glass sample bottles may cause errors

Further studies on the method of direct colorimetric titration to determine total calcium and magnesium present in a water sample have revealed the necessity for certain precautions in interpreting hardness values so obtained. The high degree of accuracy, speed and convenience possible with this method has made it very useful in control of lime-soda softeners, hot phosphate softeners and the various ion exchange processes. It is also quite useful in selective calcium softening.

Studies have shown that caution must be taken in filtering samples for test through filter papers, since small amounts of hardness picked up from the paper are detected readily by the test. It is recommended that filtration of low hardness samples be avoided if possible.

If filtration is a necessity, the filter paper should be well pre-washed with the sample liquid in order to minimize hardness contamination. Similarly, care must be taken in interpreting hardness picked up from glass sample bottles.

The sensitive direct colorimetric titration method reveals a small amount of hardness in boiler water, even where adequate phosphate and pH values are maintained in the water. The soap test will usually indicate zero hardness on these waters. This small amount of hardness is not considered significant from the standpoint of boiler cleanliness.

Occasionally, a water sample is encountered which gives difficulty with the endpoint because of very high copper or manganese content. It has been found that the addition of a crystal of sodium sulfide to sample in casserole will usually eliminate this interference by precipitating the offending metal ion.

In general, it has also been found desirable in the routine analysis of boiler water samples to take a 25 ml sample, dilute with 25 ml distilled water, and thus eliminate the effect of possible high hydrate concentrations. By this procedure, any high color of the boiler water is diluted, and observation of endpoint made easier. Due to the high sensitivity of the titration method, such dilution will not significantly affect the test accuracy.

It has been found that the titrating solution, hardness indicator and calcium indicator are quite stable. Some precautions must be exercised with opened bottles of the buffer solution.

(From Vol. 19, No. 8 of "The Betz Indicator," published by W. H. & L. D. Betz, Dept. CP, Gillingham & Worth Sts., Philadelphia 24, Pa.)

Send for Your Copy...

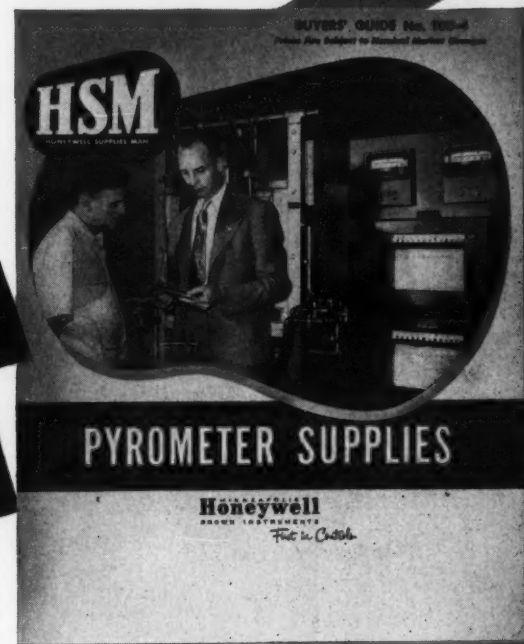
pyrometer supplies buyers' guide No. 100-4

Today!

IT'S NEW!

IT'S COMPLETE!

IT'S YOURS FOR THE ASKING!



HERE'S the brand new edition of the Brown Pyrometer Supplies Buyers' Guide . . . just off the press and designed to be even more helpful in your selection and ordering.

Included are standard and special thermocouple assemblies, elements and components . . . protecting tubes and covers . . . thermocouple and extension wire . . . valuable technical data and basic prices . . . and a host of other important information.

This buyers' guide is but part of the complete

service available to you through your local Honeywell Supplies Man . . . with his HSM Plan for greater convenience and economy in all of your pyrometer supplies purchasing. Call him in for a discussion of your needs . . . he is as near as your phone.

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MINNEAPOLIS-HONEYWELL REGULATOR CO.,
Industrial Division, 4421 Wayne Ave., Philadelphia 44, Pa.

MINNEAPOLIS Honeywell

Brown Instruments

When inquiring check CP 6465 on handy form, pgs. 2-3

PALMER

mercury actuated Dial Thermometers
now in three types to suit any requirements



1
Rigid Stem Dial Thermometer

Rigid stem tapered bulb, interchangeable with standard industrial thermometer separable socket.



2
Wall Mounted Dial Thermometer

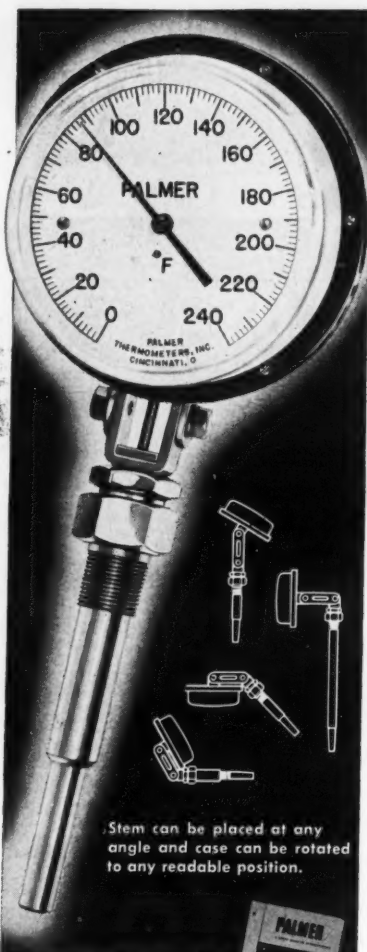
Wall mounted dial thermometer with flexible connecting arm. Case adjustable to easy reading position.



3
Flush Mounted Dial Thermometer

Flush mounted style for panel mounting with flexible connecting arm.

All three types have a full 4 1/2" dial face



Stem can be placed at any angle and case can be rotated to any readable position.

SEND FOR THIS BULLETIN
For details on the New Palmer Dial Thermometer, please write for Palmer Bulletin 51-129.

for accuracy: Mercury actuated . . . Fully Compensated by Invar Compensation. Guaranteed Accurate 1 scale division.

for angularity: Can be adjusted to most readable position at any angle desired.

for readability: Bold Black Numbers . . . 11" of scale Reading Dial face can always be placed in easiest readable position.

for interchangeability: Always specify "PALMER" Separable sockets as they are interchangeable for Dial or Industrial type Thermometers.

PALMER THERMOMETERS, INC.
Mfrs. of Industrial Laboratory
Recording and Dial Thermometers
2528 Norwood Ave., Cincinnati 12, O

PROCESS INSTRUMENTATION

Switch applies for control of liquid, solid levels . . .

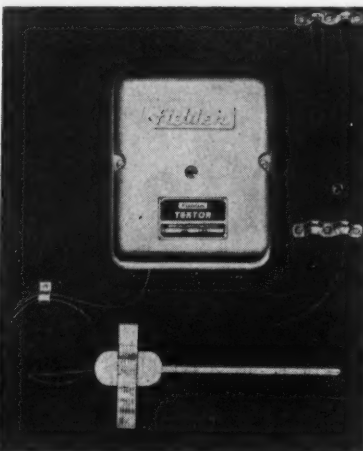
sensing electrode inserted at desired control level, needn't make electrical contact with material

Uses: Switch is suitable for level control of practically every type of liquid, powder, and granular solids.

Features: Changes in level as small as 1/32 or 3/8" can be utilized for bringing about control action.

Description: Material whose level is being controlled may be of high or low viscosity, and may have electrical conducting or insulating properties.

Model AJ-1 Tektor level switch does not have to make electrical contact with the material under control. Sensing electrode (selected for specific application) consists of a simple probe 4-6" long x 1/4-3/8" diameter which is inserted into the container at the level at which control is required. For some applications the sensing element may be flush with the inner surface of the container. Probe may be insulated or not.



Level control — probe below, switch mechanism above

Electrode is connected to the instrument by means of a 2' length of cable. Instrument is housed in a dust-tight, splash-proof, die-cast aluminum box, 6 1/2 x 7 1/2 x 4" deep, with screw-on cover. Other models are offered for conditions involving frothing, and upper and lower limit levels.

Source: Product of the Fielden Instrument Corporation, Dept. CP, 2920 N. Fourth St., Philadelphia 33, Pa. . . or for more information check CP 6467 on handy form, pages 2 and 3.

Thermometer used to meet need for exact measurement in marketing of oil . . .

temperature is an important factor in determining volume of oil at the time of sale

Uses: Dimensions make it useful for temperature readings in 2" gauge pipes in oil storage tanks or wherever a cupcase thermometer can be applied.

Feature: Cupcase thermometer has a cup capacity of 100 ml as compared with smaller types of from 20 to 60 ml capacity. Thermal inertia resulting from larger capacity provides resistance to temperature change as the thermometer is raised from reading depth and passes through varying temperatures at other levels. The sample recovered from the specified depth is more representative, thus permitting accurate volumetric corrections for readings above or below 60°F, the sale price temperature in this type of work.

Description: Manufactured to meet ASTM specifications, the Model 8652 thermometer has a bulb positioned



Check Temperatures

Instantly...
Accurately
with

Alnor TYPE 1500

PORTABLE PYROMETER

Wherever temperature readings are required—on the production line, in the laboratory or in the field—this sturdy precision instrument can bring you instant, accurate results.

Here's Why

It's Fast . . . In operation and quickly read. Precision movement designed to laboratory standards. Direct reading scale face is easily understood—no slide wires or conversion tables necessary.

It's Accurate . . . consistently to within 3/4 of one percent under almost all variable conditions. Sturdy, protective case assures continued accuracy in toughest portable service. Ten scale ranges available, from 0-400° to 0-3000°F. Equivalent Centigrade scales available at no extra cost.

It's Portable . . . compact size, 6 1/2"x6"x3", and light weight make this pyrometer highly portable and easy to use anywhere. Write today for complete details and prices. Illinois Testing Laboratories, Inc., Room 504, 420 N. La Salle Street, Chicago 10, Illinois.

Send for Bulletin on 1500 Pyrometer.

Alnor

PRECISION INSTRUMENTS
FOR EVERY INDUSTRY

When inquiring check CP 6468 on handy form, pgs. 2-3



LIQUIDS WORTH
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WORTH MEASURING

LIQUIDOMETER

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LIQUIDOMETER

Tank Gauge

- FOR GAUGING LIQUIDS OF ALL KINDS
- 100% AUTOMATIC
- APPROVED BY UNDERWRITERS' LABORATORIES

WRITE FOR COMPLETE DETAILS

THE LIQUIDOMETER CORP.
38-18 SKILLMAN AVE., LONG ISLAND CITY, I.N.Y.

When inquiring check CP 6469 on handy form, pgs. 2-3

When inquiring check CP 6466 on handy form, pgs. 2-3

$\frac{3}{8}$ " from the nearest wall of the cup and almost centered to provide the greatest possible lag. A slanting top on both sides is featured on the cup to prevent the thermometer from catching on obstructions. Made of non-sparking metal the cup measures $1\frac{3}{4}$ " in diameter.

Total length of the instrument is 16". Thermometer has a red mercury column with lens front tubing. It is available in two scale ranges, one from 0 to 180°F (ASTM No. 59F-48T), and the other from -30 to 120°F (ASTM No. 58F-48T). Both scales have 1° graduations.

Source: TAG Cupcase Thermometer, Model 8652 is a product of Tagliube Instruments Division, Weston Electrical Instrument Corporation, Dept. CP, 614 Frelinghuysen Ave., Newark 5, N.J. . . or for more information check CP 6470 on handy form, pages 2 and 3.

Aids in preparing specimens for shadow-casting work in electron microscope . . .

steel vacuum chamber permits coating of six slides at one loading; complete unit is compact

Uses: Applied in preparation of "shadow-cast" specimens for electron microscope. Specimens are prepared by depositing a thin coating of tungsten, molybdenum or other suitable material on them, by evaporation, in the all-metal vacuum chamber of the apparatus. By this means, specimen contrast is enhanced and the third dimension can usually be made clearly evident.

Features: As many as six glass microscope slides can be coated at one loading of the vacuum chamber. Use of a steel vacuum chamber eliminates the necessity of handling heavy, breakable bell jars.

Description: Vacuum chamber is evacuated at high speed by an oil diffusion pump backed by a mechanical fore pump. A discharge gauge indicates pressure up to 10^{-5} mm Hg. Specimen slide holders provide wide range of shadowing angles without filament adjustment. Inlet air valve is located near filament so that intruding air does not affect specimens adversely. Air is released into chamber by pulling slightly on filament door.

Electrical controls consist of five simple on-off switches for the main power and vacuum pumps, and a continuous control for filament current. A jack is provided for insertion of meter into discharge gauge circuit. A viewing window, shielded from both filament light and evaporated metal, permits observation of specimens and filament without blinding glare.

Entire unit, with exception of fore pump, is contained in a two-tone gray steel cabinet 14" high, 14" wide and 10" deep, weighing only 40 lb. Power requirement, including fore pump, is 700 watts at 105-125 volts, 60 cps.

Source: Development of RCA Victor, division of Radio Corporation of America, Dept. CP, Camden, N. J. . . or for more information check CP 6471 on handy form, pages 2 and 3.

SEPTEMBER, 1951

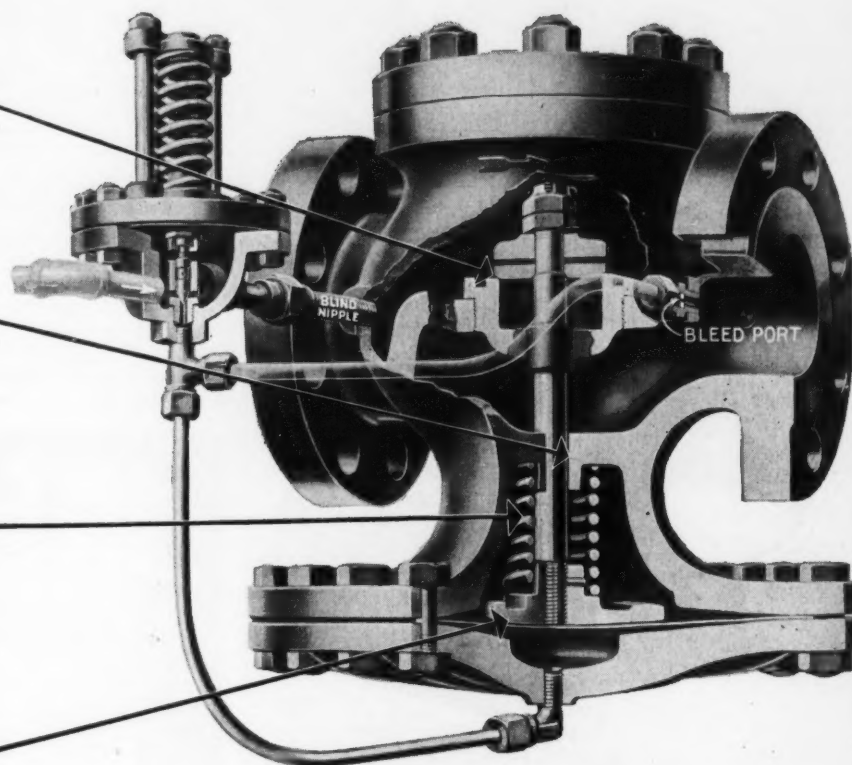
WHY Spence Regulators Outlast The Field

SECO METAL SEATS AND DISCS—Durable SECO Metal resists wiredrawing. More than twenty years of experience in thousands of installations has failed to produce a single case where SECO Metal has been cut by steam.

PACKLESS CONSTRUCTION—All Spence main valves and most pilots are built without stuffing boxes. This minimizes friction . . . eliminates much time-consuming maintenance.

SPRING OUT OF PATH OF STEAM—The spring in the Spence Regulator is out of the path of the steam or other fluid flowing through the valve. It operates at low unit stress for exceptionally long life.

LARGE BALANCED DIAPHRAGM—Spence metal diaphragms, under usual conditions, never require replacement. Spence Regulators have few moving parts and those few are ruggedly constructed and seldom require attention.



Spence Type EQ back pressure regulator-operation of main valve is controlled by a sensitive pilot to regulate the initial pressure. Same pilot is used with all sizes of main valves.

The features shown above explain why you profit on every important count with Spence Pressure and Temperature Regulators.

Learn more about these and many other advantages of Spence Regulators by sending for Bulletin 350.

DURABILITY

ACCURACY

MAINTENANCE

Spence Regulators perform dependably year after year.

You can be sure of accurate control for the life of the regulator.

You don't need expensive repairs or special maintenance. That means less down-time, less time and money wasted on replacement of parts.

SE-110

SPENCE ENGINEERING COMPANY, INC.
WALDEN, NEW YORK

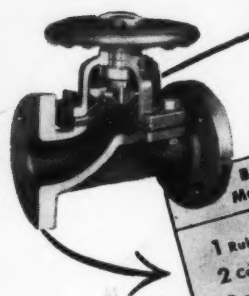
Spence

When inquiring check CP 6472 on handy form, pgs. 2-3

WHAT WOULD YOU SPECIFY

Fluid	Concentration	Temp.	Type of Valve	Valve Material
1 Sulphuric Acid	20%	120 F.		
2 Sulphuric Acid	100%	180 F.		
3 Hydrochloric Acid	32%	80 F.		
4 Hydrofluoric Acid	50%	125 F.		
5 Beer		200 F.		
6 Oxygen		Ambient		

We supplied
Grinnell-Saunders
Diaphragm Valves
with ...



Body Material	Diaphragm Material
1 Rubber lined	Natural rubber
2 Cast iron	KEL-F
3 Glass lined	Butyl
4 Magnesium	KEL-F
5 Polished bronze	White diaphragm
6 Cast iron*	Neoprene

*For oxygen service a high flash point lubricant is supplied. All valves for oxygen service are subjected to 300 lb. air underwater test.

In several of these cases other body materials or diaphragms might serve. Really important is the versatility of Grinnell-Saunders Diaphragm Valves in handling corrosive fluids, gases, compressed air, food, suspended solids . . . where corrosion, abrasion, contamination, clogging, leakage, maintenance are problems.

Grinnell-Saunders Valve bodies are stocked in cast iron, malleable iron, stainless steel, bronze, and aluminum, with other materials available on special order. Valve bodies can be lined with lead, glass, natural rubber or neoprene. Diaphragms are available of natural rubber and a number of synthetics to suit particular service conditions.

Features of the Grinnell-Saunders Diaphragm Valve

* diaphragm absolutely isolates working parts from fluid * diaphragm lifts high for streamlined flow in either direction * diaphragm presses tight for positive closure * body, lining and diaphragm materials to suit service * simple maintenance — diaphragm easily replaced.



GRINNELL

WHENEVER PIPING IS INVOLVED

Grinnell Company, Inc., Executive Offices, Providence, R. I.
Sales Offices and Warehouses in Principal Cities

PROCESS INSTRUMENTATION

**Continuously analyses, records
carbon dioxide in gas mixture
to $\pm 0.01\%$. . .**

same instrument handles water vapor in flue gas, ethylene in hydrocarbons, SO_2 in air, others

Uses: *Can be used to analyze for one infrared absorbing component in a stream of gas. Typical problems to which the continuous analyzer is known to be applied include:

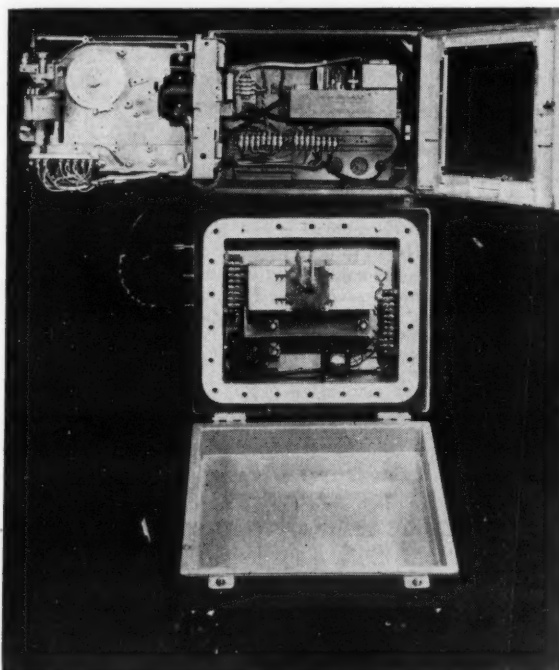
CONSTITUENT

Acetone
Acetylene
Carbon Dioxide
Carbon Monoxide
Ethyl Acetate
Ethylene
Isobutane
Methane
Sulfur Dioxide
Water Vapor

IN MIXTURE OF

air
—
air, CO , water vapor
air, or CO_2 & water vapor
toluene, ethyl alcohol
ethane and methane
n-butane, hydrocarbons
hydrocarbons, illuminating gas
air
 CO , CO_2 , N_2

Features: In cases where the component sought is the only infrared absorbing gas, sensitivity is excellent. Ranges of concentration when calibrated for CO_2 at maximum sensitivity, for example, would be 0 to 1% over a full scale of 100 divisions. Since the accuracy is plus or minus 1 division in this case, the analysis is quantitative to within plus or minus 0.01% CO_2 . Where

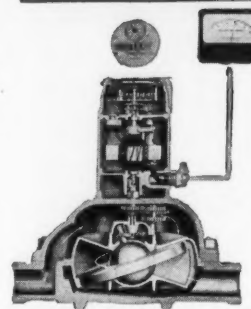


Sections of the continuous analyzer open for inspection. At top is a standard electronic recorder. In center (with cover hinged at bottom) is the detector. A voltage regulator is hidden behind the cover of the detector

the component sought is found with other gases which absorb infrared, satisfactory operation can be had by special filters and compensators. A case in point here is the analysis for ethylene where large quantities of ethane and methane (both infrared absorbing) are present. Full scale deflection can be obtained for about 2% ethylene with noise and drift well within usable limits.

Description: Two explosion proof models of the

Remote indication and control of liquid flow



Hays VERIFLOW meter accurately measures, indicates, and totals the flow of corrosive and hard-to-meter liquids without using weigh tanks, orifice plates, or gage sticks.

With the Hays VERITROL you simply set a knob at the rate of flow desired . . . then, the VERITROL controls the flow of liquid at that set-rate.

for corrosive liquids

Acetic Acid, Aluminum Potassium Sulphate, Ammonia, Calcium Compounds, Carboric Acid, Formaldehyde, Fruit and Vegetable Juices, Hydrogen Peroxide, Phosphoric Acid, Potassium Hydroxide, Sodium Compounds, Sulphuric Acid (concentrated), Stearic Acid, and many others

Send for a complete description of Hays Veriflow Meter and Veritrol.
Bulletin 48-766

THE HAYS CORPORATION

MICHIGAN CITY 12, INDIANA

When inquiring check CP 6474 on handy form, pgs. 2-3

DO YOU WANT FORMULA CONTROL?



**ROCKWELL
INDUSTRIAL METERS
MEASURE ALL THESE
LIQUIDS
AND MORE!**

Acetone
Alcohols
Ammonia, anhydrous
Ammonia, aqueous
Amyl Acetate
Asphalt, hot liquid
Beer
Benzene
Benzol
Brines
Butane, liquid
Carbon Tetrachloride
Caustic Soda solutions
Coal Tar
Cod Liver Oil
Cotton Seed Oil
Creosote Oil

Cresol
Cresylic Acid
Cutting Oil
Cyanide Solutions
Duco Thinners
Fuel Oil
Gasoline
Gin
Glycerine
Grease, lubricating
Hot Water
Kerosene
Lacquer Thinners
Linseed Oil
Lubricating Oil
Molasses
Naphtha

Oil, mineral
Petroleum
Propane, liquid
Rum
Soap, liquid
Sodium Carbonate, solution
Sodium Hydroxide, solution
Toluene
Trichloroethylene
Thinners
Turpentine
Varnish
Water
Whiskey
Wine



Get highest accuracy when handling, blending, processing, liquids. Get Rockwell meters, performance-proved to stop waste; to save materials, labor, money. Sizes $\frac{1}{8}$ " through 3". Choice of registers. Bulletin free.

**ROCKWELL
MANUFACTURING COMPANY**
PITTSBURGH 8, PA. Dept. H

CHECK . . .

. . . products you wish to measure, tear out ad and mail with name and address as an inquiry.

When inquiring check CP 6473 on handy form, pgs. 2-3

When inquiring check CP 6475 on handy form, pgs. 2-3

analyzer are available. One model is a composite assembly of voltage regulator, detecting unit and recorder. The other is a remote unit where detector may be placed as far as 600 feet from the recorder. The analyzer has two infrared beams, and in one beam is placed a permanently sealed cell (filter cell) containing a strong concentration of the gas to which the instrument must be sensitized. The sample cell, through which flows a portion of the gas stream, is traversed by both beams.

A change in concentration of the gas to be measured makes no difference in the filter cell beam, because the absorption at wavelengths characteristic of that gas is already saturated. It does cause a change of absorption in the other beam. The two beams fall on sensitive detectors, bolometers, which form two arms of a bridge circuit.

Absorption differences between the two beams and the consequent differences in energy falling on the bolometers cause deflection of a recorder pen. Gases which have absorption at other wavelengths than the gas to be analyzed affect both beams equally, and changes in their concentrations do not cause recorder deflections to occur.

Of course, there are cases in which the gas to be measured and other gases present have overlapping absorption. This requires a slightly more complicated cell arrangement, but in general it is not difficult to set up and calibrate the instrument to analyze any infrared absorbing gas in the presence of other gases.

Source: Development of Baird Associates, Inc., Dept. CP, 33 University Road, Cambridge 38, Mass. . . . or for more information check CP 6476 on handy form, pages 2 and 3.

Makes a strip-chart record of wind velocities between 0 and 200 mph . . .

also gives a continuous indication of wind velocities in the area

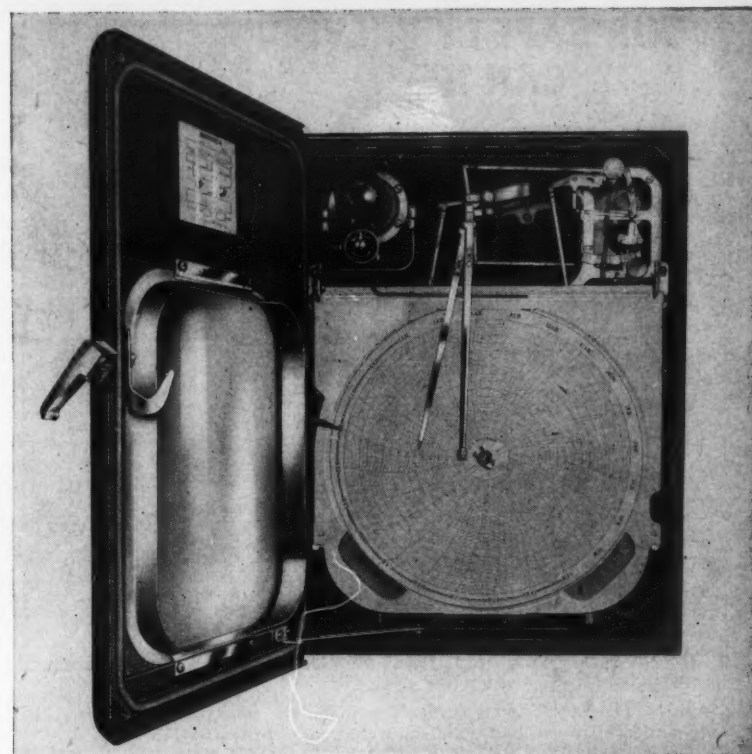
Uses: Found especially suitable for applications requiring accurate recording of wind velocities over long periods of time: air pollution research, weather stations, microclimatology, industrial process control, testing of heat and ventilation systems, measurement of gust velocities, etc. Provides indication and strip-chart record of velocities between 0 and 200 mph.

Features: Usable with either a directional or horizontally non-directional probe of the thermopile type. Probes are temperature compensated, and accuracy and calibration are not affected by the length of lead-in from the probe, permitting installation on building roof, etc. Thermostatically controlled heater in the probe can be used to prevent icing under adverse weather.

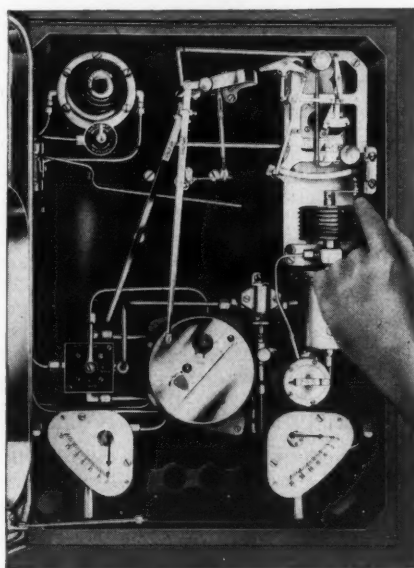
Description: Wind Velocity Recorder is entirely contained in a recorder unit, with the exception of the pick-up head (probe component). Two ranges — 0-50 and 5-200 mph — are provided on each instrument. Recorder can be supplied with a quick response for high sensitivity or with a damped response for application where average velocity readings are preferred. Wide selection of chart speeds are available.

Source: Development of the Hastings Instrument Company, Inc., Dept. CP, Super Highway & Pine Ave., Hampton 10, Va. . . . or for more information check CP 6477 on handy form, pages 2 and 3.

Anybody Can Take Care of a **BRISTOL SERIES 500 CONTROLLER**



Plant operating men quickly become familiar with it . . . and like to use it



Only One Simple Adjustment

Write or call your local Bristol representative. And write for Bulletin A120. THE BRISTOL COMPANY, 141 Bristol Road, Waterbury 20, Conn.



BRISTOL

AUTOMATIC CONTROLLING, RECORDING AND TELEMETERING INSTRUMENTS

When inquiring check CP 6478 on handy form, pgs. 2-3

YOUR SAFETY VALVES CAN BE

BOOBY TRAPS

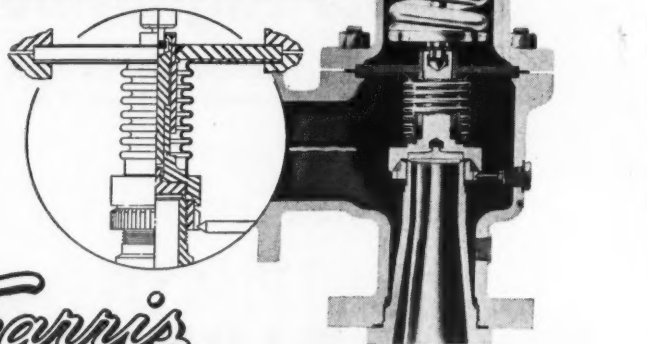
A safety valve that sticks is about as safe as a time bomb

Only BalanSeal® and FarriSeal® provide the positive protection at all times and under all operation conditions that makes them reliably safe.

Unique in design and principle, the BalanSeal Safety-Relief Valve has a protective bellows which is proportioned to eliminate any unbalanced downstream forces on the valve disc—which is perfectly balanced on its seat at the set pressure. Like its companion, the FarriSeal Valve, the guide, stem and spring are completely isolated from the lading fluid for perfect protection.

Pioneered by Farris Engineering Corp., BalanSeal, as thousands of installations are proving, is ideally suited for use wherever a collecting system is required for a series of safety-relief valves. It permits higher downstream pressure with consequent smaller piping—a feature which often permits savings in piping costs as high as 15 times the cost of the valves. The sole force opposing the opening of the valve is the spring. Static or surge downstream back pressure cannot affect the disc and has no effect on the relieving point.

You'll want to know more about the revolutionary safety-relief valve that can't stick under any circumstances. BalanSeal is described in detail in Bulletin No. 51B. Send for it today.



Patented
and
Patents
Pending

Farris

SAFETY and RELIEF VALVES

FARRIS ENGINEERING CORP.

406 Commercial Avenue

Palisades Park, N. J.

PROCESS INSTRUMENTATION

Photomultiplier makes gamma counter more sensitive . . .

scintillation counter 25 to 100 times as efficient as Geiger

Uses: Counter for gamma rays only.

Features: Unit has a built-in 5819 photomultiplier tube which adds to its sensitivity. The most sensitive type of gamma counter known, it is 25 to 100 times as efficient as a normal Geiger counter.

Description: Chrome plated brass cylinder houses a sodium iodide-thallium activated crystal and a 5819 photomultiplier tube. The necessary dropping resistors are mounted on the base of the tube, and a cathode follower pre-amp circuit may be installed if desired. Crystal, in the Model SC-2 is specially mounted in a polystyrene holder to provide maximum optical transmission. This makes the unit an efficient end-window counter.

Counter comes complete with cable, ready to be used in conjunction with any commercial scaler or count-rate-meter employing a pulse amplifier, discriminator, and well regulated high voltage power supply.

Source: Development of Nuclear Research and Development, Inc., Dept. CP, 1094 Sutter Ave., St. Louis 5, Mo. . . or for more information check CP 6480 on handy form, pages 2 and 3.

Pyrometer catalog shows many types

Thirty-six-page catalog describes and explains several types of pyrometers. A contact meter, relay type instrument, is featured. This temperature controller unit actually has a contact built into the meter section. Schematic circuits, photographs and descriptive text outline operation and performance.

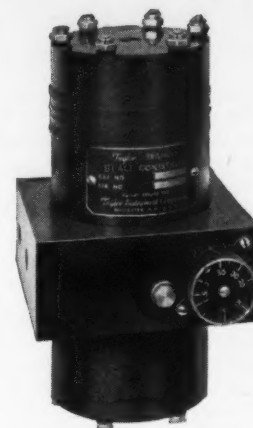
Catalog 1A is issued by Assembly Products Inc., Dept. CP, Main at Bell St., Chagrin Falls, Ohio. When inquiring specify CP 6481 on handy form, pages 2 and 3.

Battery powered unit makes 500 v tests of insulation . . .

no cranking, leveling necessary for insulation up to 100 megs

Uses: Portable meter is used for testing insulation up to 100 meg-ohms.

Features: Battery power elimi-



Both Proportional
and Reset Control
Responses
Adjusted by . . .

ONE KNOB

Taylor's new BI-ACT® Controller has two control responses, proportional and automatic reset, both adjusted with one stability knob. Its dependable performance and simple adjustment make the inexpensive BI-ACT Controller the ideal instrument for applications where the precision performance of Taylor's three response TRI-ACT® Controller is not considered essential.

The BI-ACT and TRI-ACT Control elements are alternates in Taylor's TRANSET® Control System, which controls any process variable with accuracy never before thought possible. For full information, see your Taylor Field Engineer or write for Bulletin 98097. Taylor Instrument Companies, Rochester, N.Y., or Toronto, Canada. Instruments for indicating, recording and controlling temperature, pressure, flow, liquid level, speed, density, load and humidity.



*Trade-Mark

TAYLOR INSTRUMENTS MEAN ACCURACY FIRST

When inquiring check CP 6482 on handy form, pgs. 2-3

Automatic Controls That Save Material and Labor

Lumenite Electronic Controls and Timers, designed for all types of automatic operation, have in years of use proven their superior worth.

ELECTRONIC LIQUID with no **LEVEL CONTROLS,** floats or moving parts, control all types of liquid levels to 1/100 inch.

INTERVAL TIMERS control any time operation or process to fractional seconds or hours.

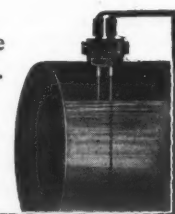
MAGNETIC maintain constant **CONTACTORS** electrical circuits or step up control impulses.



Write for catalog. Give your requirements, please.

**LUMENITE
ELECTRONIC CO.**

407 S. Dearborn, Chicago 5



When inquiring check CP 6483 on handy form, pgs. 2-3

CHEMICAL PROCESSING

When inquiring check CP 6479 on handy form, pgs. 2-3



Save Time, Labor, Dollars!

TEST • STUDY • CONTROL VISCOSITY

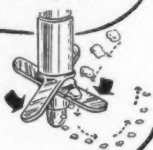
**As Simply, Quickly and Easily
as Taking Temperature Readings**

Just a flick of a switch, then read the Brookfield dial, and you have your viscosity determination in centipoises. The whole operation, including cleaning up, usually takes less than a minute.

Available in a variety of models suitable for extremely accurate work with both Newtonian and non-Newtonian materials, Brookfield Viscometers are portable and plug in any A.C. outlet — can be used in Lab, Plant or both.

Write today for fully illustrated catalog showing Brookfield Viscometers adaptable to any viscosity problem from less than one to 32,000,000 centipoises.

BROOKFIELD COUNTER-ROTATING MIXER — Two concentric, oppositely rotating shafts, propeller equipped and driven by two motors, produce an annular flow and up to 48,000 scissor-like cuts/minute. Enable exceptionally fast, effective and efficient laboratory mixing. Not a "stirrer." Write for Brookfield MIXER brochure.

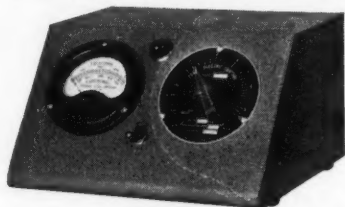


Brookfield ENGINEERING LABORATORIES, INC.
210 Porter St., Stoughton, Mass.

When inquiring check CP 6484 on handy form, pgs. 2-3

TEMCOMETER

Temperature Controller and Indicator



Combines in a single, compact unit an advanced type of input controller and an indicating pyrometer. Unlike other type controllers, the Temcometer automatically maintains even temperature regardless of fluctuations in line voltage. A sensitive panel-operated thermostatic switch can be set to regulate current input into the heating equipment anywhere from 5% to 100% time "on."

Originally designed as a built-in feature of Temco electric furnaces, this complete control unit is now made for use with other makes of furnaces and electric heating devices. Made both with and without pyrometer for maximum loads ranging from 2.3 to 5.7 kw. Priced from \$38.50 to \$62.50.

*Write for new handy Reference File
and dealer's name.*

THERMO ELECTRIC MANUFACTURING CO.

476 Huff St., Dubuque, Iowa.

When inquiring check CP 6485 on handy form, pgs. 2-3

SEPTEMBER, 1951

PROCESS INSTRUMENTATION

rates the need for cranking or leveling in any test. Voltage furnished is 500 v DC.

Description: Vibrotest model 264 is similar in circuit design to other models of the line. Due to battery power, no cranking is needed. The same two binding posts are used for all tests. Unit, including batteries, is self contained in a cabinet 7-3/4 x 6-1/8 x 7-1/2" and weighs 18 lb.

Besides the 0 to 100 megohm range at 500 v, the instrument has a low 0 to 10,000 ohm scale. Center scale readings are 2 megs and 200 ohms, respectively. The higher range is ordinarily used for periodic checks of insulation condition so that failure can be predicted. The lower serves as a continuity checking meter.

Source: Made by Associated Research, Inc., Dept. CP, 3758 W. Belmont Ave., Chicago 18, Ill. . . or for more information check CP 6486 on handy form, pages 2 and 3.

Records micro-surface in one minute

Folder describes a method of making a permanent record of microscopic surfaces in one minute. Plastic film, moistened with solvent, is pressed against surface to be inspected. Impression made by the microstructure of the surface is then magnified by a projector. Magnifications up to 100 diam are easily obtained. Method works well on flat or curved surfaces.

Photomicrographs shown in folder were made by this method and include machined metal surfaces, abraded ceramic surfaces and cotton fabric. "Surface Evaluation by Faxfilm" is issued by Instrument Division 12, The Brush Development Company, Dept. CP, 3405 Perkins Ave., Cleveland 14, Ohio. When inquiring specify CP 6487 on handy form, pages 2 and 3.

Catalogs equipment for high vacuum

Catalog covering 40 pages of illustrations and descriptive matter outlines high vacuum equipment, high vacuum pumps and oils, gauges, glass working machinery—including a full line of hand fires, torches, blast burners, needle-point burners and accessories, cross-fires, and miscellaneous supplies for glass blowing. Catalog 11 K is issued by the Research Vacuum Supply Company, Dept. CP, 3434 W. Montrose Ave., Chicago 18, Ill. When inquiring specify CP 6488 on handy form, pages 2 and 3.

BIDDLE

NUMBER 5 OF A SERIES

Instrument News

DR. HORN PRECISION HAND TACHOMETER Popular Instrument for Measuring Centrifugal and Surface Speeds

We are now prepared to make immediate delivery of this Precision Hand Tachometer, considered by many to be the ultimate in a fine speed measuring device. Pointer affords instantaneous reading of rpm of rotating shafts, or linear and peripheral speeds, regardless of direction of rotation. Measures in six ranges from 25 rpm to 30,000 rpm. Protected against overspeeding damage. Operates equally well in a vertical, horizontal, or slanting position. Simple mechanism. Low maintenance. Longlife.

James G. Biddle Co. is the sole distributor and authorized service agency for these highly regarded instruments. The Dr. Horn Tachometer comes in a high quality case with six accessories, thoroughly protected.

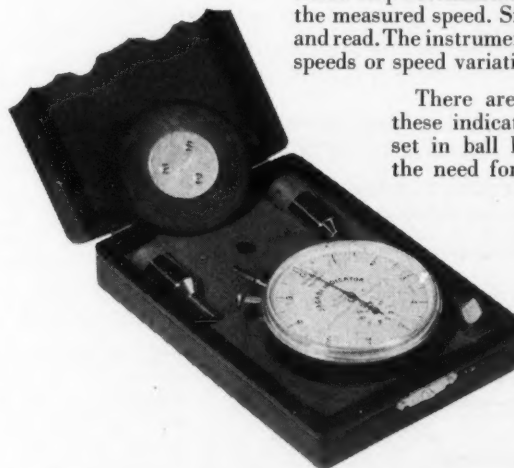
Write for Bulletin 35-65-CP.



Sold in the U.S.
only through
James G. Biddle Co.

JAGABI® SPEED INDICATORS — Chronometric Type Measure Average RPM without Any Calculations

These chronometric type speed measuring instruments are for measuring average number of revolutions per minute *without any calculations*. After a short interval of 3 or 6 seconds of running time, the hands stop automatically at positions which indicate the measured speed. Simply remove the instrument and read. The instruments do not show instantaneous speeds or speed variations.



There are two new improvements in these indicators. The shaft or spindle is set in ball bearings thereby eliminating the need for lubrication. The shaft now has the same diameter over-all which will eliminate the possibility of ruptures of the shaft.

Available in six styles — from L-Speed, 200 max. rpm to Hi-Speed, 100,000 max. rpm. A case and accessories are provided with each instrument.

Send for
SPEED MEASURING
BULLETIN 35-CP

Jagabi Speed Indicator as supplied in case with accessories.

**JAMES G. BIDDLE CO., 1316 ARCH ST.
PHILADELPHIA 7, PA.**

ELECTRICAL TESTING • SPEED MEASURING INSTRUMENTS • LABORATORY & SCIENTIFIC EQUIPMENT

When inquiring check CP 6489 on handy form, pgs. 2-3

OVER-RANGING

will
not
damage

BARTON FLOWMETERS!

here's proof...

A user reports this test made on a BARTON Flow-meter with a 25" W.C. differential range at a pressure level of 1200 psi:

A 300 psi over-range pressure was alternately applied in the normal direction and then in the reverse direction approximately 20 times a minute, continuously—day and night—for three weeks! At the conclusion of the test—after more than one-half million differential over-ranges in each direction—the instrument was checked for zero and calibration; it had changed less than one per cent! AND no maintenance or parts replacement was required!

less maintenance...

ALL MAJOR SOURCES OF TROUBLE inherent in other differential-pressure meters ARE ELIMINATED IN BARTON Rupture-Proof FLOWMETERS!

NO LIQUID SEALS TO LOSE—corrosive and volatile liquids are handled without seal pots, thus reducing installation and upkeep costs.

NO MERCURY USED—hence, no costly losses due to leakage or theft, and no contamination of liquid being handled. Likewise, installation can be made without accurate leveling.

EASY TO OPERATE—Unskilled personnel can put a BARTON in operation without danger of damage to the meter.

CLEANING ISN'T NEEDED—a BARTON drains or vents itself completely. No pockets to trap condensates. No floats, chains, or links to corrode. Assures permanent positive accuracy.

plus value features...

- ✦ Rupture-proof Stainless Steel Bellows.
- ✦ Torque-tube Drive—no pressure bearings.
- ✦ Pulsation Dampener—externally adjustable.

for measuring

FLOW • LIQUID LEVEL • DIFFERENTIAL PRESSURE

WRITE FOR DETAILS IN BULLETIN 11C4 TODAY!

**BARTON
INSTRUMENT CORPORATION**

1437 SO. EASTERN AVE., LOS ANGELES 22, CALIF.

When inquiring check CP 6490 on handy form, pgs. 2-3

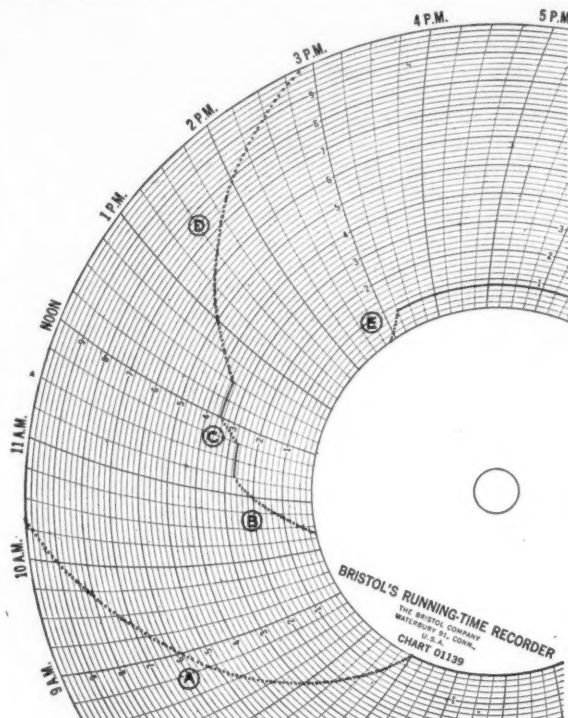
Page 74

PROCESS INSTRUMENTATION

Used for recording total number of intermittent operations and finding frequency...

record enables company to determine effect of different operating conditions, operators

For counting the total number of intermittent operations and recording time of their occurrence, a Running-Count Recorder is available. This instrument plots a curve of number of operations (or counts) against time as a series of dots drawn from zero to full scale on a circular chart. On reaching full scale, pen is automatically reset to zero, without recording on the chart, to begin another traverse. In operation, the pen is driven across the chart by a cam which is mechanically rotated in uniform steps by a ratchet wheel and pawl actuated by a 10-volt DC electromagnet. Magnet is energized when the electrical circuit is completed



Section of chart shows dotted lines representing count of operations, complete traverse of the chart being 100 operations. Continuous lines are a measure of time during which no operations take place

by closing of the contact on the machine whose operation is being recorded.

Each operation of the machine closes the contact switch and moves the pen upscale one step. Due to the rapid movement of the pen between steps, no trace is produced and the record is a series of dots. A predetermined number of counts or steps is required to drive pen through a complete scale traverse from chart zero to full scale; count ranges of 100, 250, 500 or 1000 per traverse are available.

Prolonged contact duration or contact as short as 0.5 seconds will not vary steps or cause repeating.

Total operations or counts in any time interval is determined from the number of traverses. Counts between any two points of a single traverse on the chart can be determined without counting by using calibrated scale.

Hourly rates of production, which may be affected by

CAMBRIDGE SURFACE TENSION INDICATOR



For Measuring Surface and Interfacial Tension

The Cambridge Surface Tension Indicator is based on the instrument designed by Dr. P. L. de Noüy for the measurement of the surface tension or interfacial tension of liquids by the ring method. An accurate determination is possible in one to two minutes with this instrument. It is particularly useful for tests of surface tension of liquids which are available only in small quantities. In such tests a watch glass or silver vessel is substituted for the cylindrical vessel shown. Send for Bulletin 7A.

CAMBRIDGE INSTRUMENT CO., INC.

5706 Grand Central Terminal, New York 17, N. Y.

PIONEER MANUFACTURERS OF PRECISION INSTRUMENTS.

When inquiring check CP 6491 on handy form, pgs. 2-3



*All-Electric
Floatless*

LIQUID LEVEL CONTROLS

● Write for latest catalog covering the complete line of B/W Induction Relays, Induction Relay Switches, Relay Enclosures, Contactors and Starters, Multiple Pump Controls, Electrode Holders, Starter and Relay Combinations, Special Controls and Panels.

Controls will never trouble you, when you buy B/W

B/W CONTROLLER CORPORATION
2204 East Maple Road, Birmingham, Michigan

FIRST IN THE FLOATLESS CONTROL FIELD

When inquiring check CP 6492 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESS INSTRUMENTATION

operator fatigue, variations between operators, effect of training programs, improved working conditions, etc., are easily determined with the record.

Time during which no operations occur is shown as a continuous line running concentric to the center of the chart, so that lost time during any period can be easily found.

Source: The Bristol Company, Dept. CP, Waterbury 91, Conn. . . . or for more information check CP 6493 on handy form, pages 2 and 3.

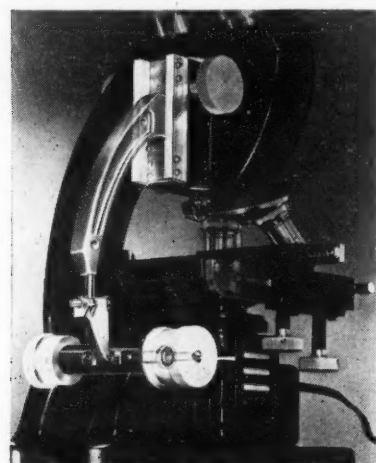
Focusing easier on microscopes incorporating ball-bearing and roller design . . .

frictionless movement is effected throughout entire focusing system

Uses: Features make instrument applicable to any type precision microscope work, particularly those tasks requiring long, continuous periods of operation.

Features: Ball-bearing and roller fine adjustment with graduations on knob in single microns. Fine adjustment knob is positioned low for comfortable operation.

Description: Microscope line of manufacturer incorporates preceding and various other features. The ball-



View shows incorporation of ball-bearing design

bearing carrying the fine adjustment shaft is the radial thrust type that makes operation effortless and eliminates backlash—when knob is released, focus stays where it is left. Two rollers on the lever transfer horizontal movement of the screw to vertical travel of the focusing slide. The slide is fitted with ball bearings assembled in pressure plates. Located around the outer rim of the

nosepiece are ball bearings which carry the weight perfectly distributed throughout the entire circumference. A ball-stop insures accurate positioning of the objective.

Source: Dynoptic Labscopes are products of Bausch & Lomb Optical Company, Dept. CP, 635 St. Paul St., Rochester 2, N.Y. . . . or for more information check CP 6494 on handy form, pages 2 and 3.

Instrument uses electric sensing, recording; pneumatic controlling

Specification sheet describes an instrument using typical electrical sensing elements (thermocouples, resistance thermometers, etc.) and balanced electronic recording with a pneumatic controller system. Standard parts are used throughout. Specification Sheet 175 is issued by Brown Instrument Div., Minneapolis-Honeywell Regulator Company, Dept. CP, Station 40, Wayne and Windrim Aves., Philadelphia 44, Pa. When inquiring specify CP 6495 on handy form, pages 2 and 3.



**Don't
take weights
too lightly!**

New 'Beckerloy' Weights Retain Accuracy ... Corrosion and Wear Resistant!

Now you can be sure your weights will be accurate. New 'Beckerloy' weights are made of a special non-magnetic, corrosion-resistant, stainless type alloy. Permanent mirror finish requires no lacquering.

What's more, new 'Beckerloy' weights provide maximum resistance to damaging action of alkaline and acid action, as well as to atmospheric conditions. They're unusually hard, too, and constant in mass, to reduce abrasion to an absolute minimum.

For full information on 'Beckerloy' weights of all classes, or precision brass weights of all types, contact your Laboratory Supply House, today, or write to:

Christian Becker

Division of

THE TORSION BALANCE COMPANY

Main Office and Factory: Clifton, New Jersey

Sales Offices: Chicago • San Francisco

When inquiring check CP 6496 on handy form, pgs. 2-3

IRON BULWARK

AGAINST CORROSIVE FLUIDS

Fairbanks® all iron gate valves

...are made of high-test alloy iron to withstand the action of many of the strongest chemicals such as concentrated sulfuric acid, alkalis, aniline oils, sodium and potassium cyanides and creosote. These iron body valves give long service under the severe operating conditions that exist with use of these destructive agents.

Fairbanks All Iron Gate Valves—like those in all Fairbanks lines—are low in maintenance cost, easy to operate and long-lasting in service... a real answer to cost-cutting needs today.

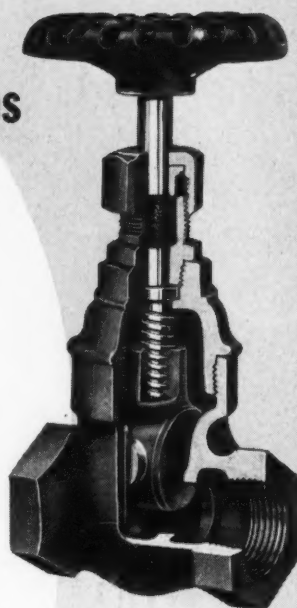


Fig. 0318
ALL IRON GATE VALVE
150# SWP 225# WOG
Non-Rising Stem • Solid
Wedge • Taper Seat
½"-2" Sizes

Fig. 0904
ALL IRON GATE VALVE
125# SWP 200# WOG
Solid Wedge • Taper Seat •
Malleable Iron Seat Rings
2"-12" Sizes



Fig. 0418
IRON BODY U-BOLT
GATE VALVE
150# SWP 225# WOG
Bronze Mounted • All
Iron Rising Stem • Solid
Wedge • Taper Seat
½"-4" Sizes

For handling other types of corrosive fluids such as dry carbon dioxide, ethyl acetate, malt beverages, propane and butane gas use FAIRBANKS BRONZE SOLDER END and FAIRCO-BRAZE (silver-brazed) VALVES.

For full details consult your distributor or write direct.

THE
Fairbanks
COMPANY

393 LAFAYETTE STREET • NEW YORK 3, N. Y.
Branches: New York 3 • Pittsburgh 22 • Boston 10 • Rome, Ga.

CASTERS • TRUCKS • VALVES • DART & PIC UNIONS

PROCESS INSTRUMENTATION

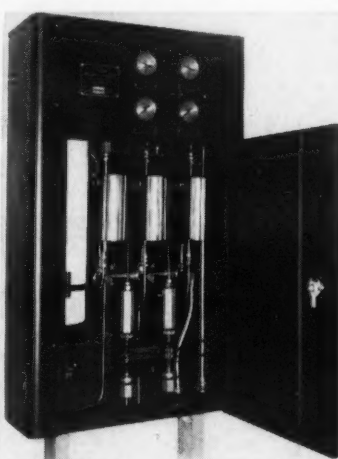
**Samples steam flow,
reporting gases,
solids...**

splits steam stream; checks gases, solids in separate parts

Uses: For investigations of steam carry-over or purity conditions.

Features: Splits stream into two parts; gases can be found in one while solids are found in other. Both gases and solids can be followed concurrently.

Description: Hagan Automatic Degasser separates the samples of gas-containing and solids-containing steam so that each can be evaluated. It handles steam in the 15 to 2500 psi



Degasser unit aids in continuous recording of solids and gas content of steam

range. The higher pressures (above 50 psi) are first throttled. Sample streams are condensed and fed to conductivity cells. Time interval from entrance of steam to the degasser until the time it is ejected from the cell is of the order of one minute. This is accomplished by using a small size cell and by keeping fluid holdup in the system to a minimum.

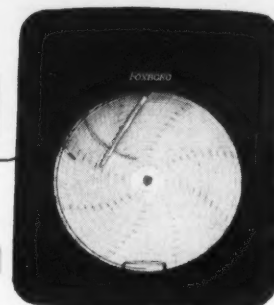
A second cell can be used, following the solids cell for checking gas concentration. CO₂ is completely eliminated from the solids sample, and at least 95% of the ammonia is removed. For greatest usefulness, the degasser is hooked up to a two-point recorder of conductivity. This provides a constant record of solids and gas which can be tied-in with others.

Present model is housed in a mild steel cabinet which allows easy access to working parts.

Source: Product of Hagan Corporation, Dept. CP, Hagan Building, Pittsburgh 22, Pa. . . . or for more information check CP 6498 on handy form, pages 2 and 3.

**NEW
ACCURACY**

**for CONCENTRATION
MEASUREMENT**



New opportunities for higher accuracy in liquid concentration control are now offered by Foxboro Temperature Difference Measurement. This modern method of measurement takes full advantage of Foxboro Dynalog Electronic Instruments... unequalled for their sensitivity, speed and accuracy. By continuous comparison of boiling point of product with that of water at the same pressure, a temperature difference Dynalog Recorder accurately measures boiling point rise.

Important new possibilities are opened up by this precise method of measuring temperature differences. Consider where it might help you. Write for details. The Foxboro Co., 1909 Nephcset Ave., Foxboro, Mass., U.S.A.

FOXBORO

DYNALOG ELECTRONIC INSTRUMENTS

When inquiring check CP 6499 on handy form, pgs. 2-3

**THAT TOUGH
INTERCOM
PROBLEM**

NO ONE ELSE CAN LICK



may be a "natural" for
WHEELER



**Soand Powered
TELEPHONES**

- NO BATTERIES
- NO OUTSIDE POWER
- NO ELECTRICAL HAZARD
- NO MAINTENANCE

Up to 20 miles • up to 12 stations • many variations

THE WHEELER INSULATED WIRE COMPANY, Inc.

Division of the Sperry Corp.

1112 EAST AURORA ST., WATERBURY 20, CONN.

When inquiring check CP 6500 on handy form, pgs. 2-3

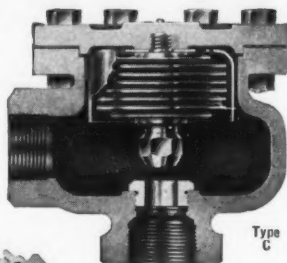
CHEMICAL PROCESSING

15 of 20 Engineers Prefer Nicholson Traps

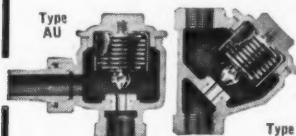
To determine the best steam trap on which to standardize, a large processing firm recently asked their plant engineers for their preference. In 15 out of 20 plants the choice was Nicholson. The repeated adoption of Nicholson steam traps by plants currently in big "cost-reduction-through-modernization" programs is another indication of their advanced features.

To learn why an increasing number of leading plants are standardizing on Nicholson thermostatic steam traps send for our catalog.

5 TYPES FOR EVERY APPLICATION, process, heat, power. Sizes 1/4" to 2"; press. to 225 lbs.



Type C



Type AHV

BULLETIN 450
or see Sweet's

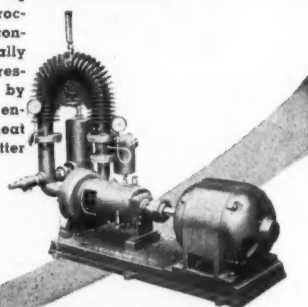
W. H. NICHOLSON & CO. 181 OREGON STREET
WILKES-BARRE, PA.
Sales and Engineering Offices in 53 Principal Cities

When inquiring check CP 6501 on handy form, pgs. 2-3

SAVINGS IN PROCESS STEAM

In 66 industries Cochrane C-B System of Condensate Drainage Control has helped produce quality goods at lower cost through better steam usage. By providing optimum heat at process equipment, returning condensate to boiler at practically the same temperature and pressure as when it left, and by draining condensate free of entrained air to boiler without heat loss, it has resulted in better

products at substantial savings in fuel, time and labor. Write for Publication 3250 and you will get some profitable ideas on how to get more out of your process steam.



COCHRANE

CB SYSTEM OF CONDENSATE DRAINAGE CONTROL

COCHRANE CORPORATION

3162 N. 17th Street, Philadelphia 32, Pa.

In Canada: Canadian General Electric Co., Ltd. Toronto

Please send me a copy of your Publication No. 3250 on Cochrane C-B System of Condensate Drainage Control

Name

Firm

Address

City Zone State

When inquiring check CP 6502 on handy form, pgs. 2-3

SEPTEMBER, 1951

PROCESS INSTRUMENTATION

German (Horn) tachometers now are supplied in U. S. . . .

composite speed range is from 25 to 30,000 rpm in six scales

Uses: For indicating rotational speed of accessible parts.

Features: Six speed ranges cover rotation from 25 to 30,000 rpm.

Description: Hand-held instrument can be set to read any of the six scales. It is protected from dam-



Tachometer has six ranges

age from over-speeding. Simple construction makes for ruggedness and long life. German plant making these Horn tachometers has recently resumed production after several years of being out of commission.

Source: Product of James G. Biddle Co., Dept. CP, 1316 Arch St., Philadelphia 7, Pa. . . . or for more information check CP 6503 on handy form, pages 2 and 3.

Controls weighing electronically

Multi-tank weighing and batch control of liquids is one of four applications discussed in four-page bulletin. Points out that electronic weighing systems operate without moving parts and are suitable for the remote indicating-recording, controlling, and printing of weights. Bulletin also describes incorporation of system in weight calibration kit for checking platform scales, continuous integrator for materials carried by belt, and axle-scale for highway weight checking.

"The SR-4 in Industry" is issued by Testing Equipment Department, the Baldwin-Lima-Hamilton Corp., Dept. CP, Philadelphia 42, Pa. When inquiring specify CP 6504 on handy form, pages 2 and 3.



where production records are made . . . the wheelco recorder

Here's the Central Manufacturing District of Chicago—where more than 360 industries, concentrated in less than 1½ square miles, manufacture thousands of different products. Yes — here where production records are made and kept — the Wheelco Capacilog is invaluable for measuring, indicating, controlling, recording electrically measurable variables.

Assembly line production and simplicity of construction make it possible to deliver most models within 20 days.

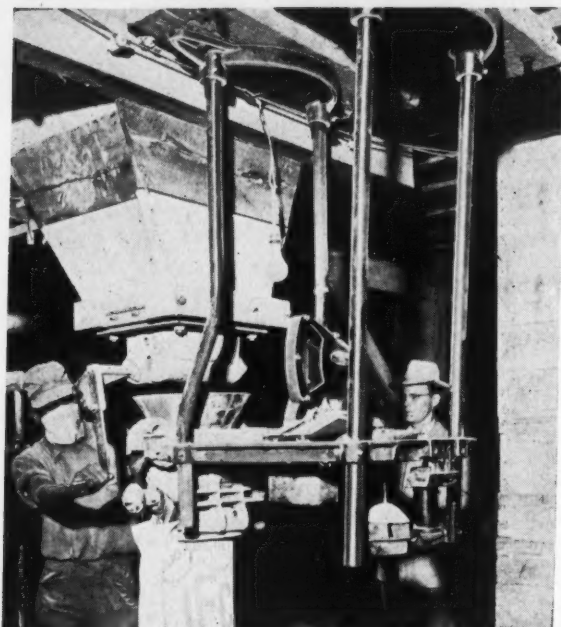
Specify the Wheelco Capacilog, a deflection type strip chart recorder that gives you accuracy to ¼ of 1% of total scale — suppressed scales with a built in reference point — Thermocouple Break Protection that completely eliminates "residual error."

Instrumentality When you specify Wheelco you specify Instrumentality—Wheelco's ability to design and build efficient and economical instruments to fulfill your needs for accurate and dependable control and record.

Wheelco Instruments Company, 746 W. Harrison Street, Chicago 7, Illinois

wheelco  **electronic controls**

When inquiring check CP 6505 on handy form, pgs. 2-3



EXACT WEIGHT
Sacking Scale operating at 5 to 8 bags per minute. Scale is reverse mounted to fit local mill conditions and afford more floor space.

Spend Weighing Equipment Dollars Wisely

The facts are that practically everything processed uses scales . . . weighing equipment of some nature. Such operations as ingredient compounding, laboratory work, blending, packaging and production line checkweighing are the most common in the chemical industry today. Most chemical products owe their exceptional uniformity and accuracy to good scales. Engineers entrusted with profitable production now generally agree the weighing element is one of the most vital cost control measures at their disposal. This is why weighing equipment dollars should be spent wisely. Few individual equipment requirements do more to improve uniformity and quality than the right weighing units in the right place and no weighing equipment is better than EXACT WEIGHT Scales. Today these famous industrial scales are doing more varied jobs, in more plants, in manual, semi-automatic and fully automatic operations than ever before. Their capacity to save time, money, product and labor are thoroughly recognized by men responsible for profitable volume production everywhere. Write or call us about your job.

EXACT WEIGHT SCALES

Industrial Precision

THE EXACT WEIGHT SCALE COMPANY

904 W. Fifth Ave., Columbus 8, Ohio
2920 Bloor St., W. Toronto 18, Canada

When inquiring check CP 6506 on handy form, pgs. 2-3

PROCESS INSTRUMENTATION

Lab checks tube emission rating and filter transmission curves before units go out . . .

UV tubes furnished are rated in microwatts per square centimeter; minimum rating is 400

Uses: UV generator tubes are used in fluorescence detector-comparators.

Features: Each generator, including the filter, is given tests to determine emission and transmission prior to shipment. Minimum acceptable rating is 400 microwatts per square centimeter. Data sheets are shipped with the unit giving tube rating, transmission curves of the filters and spectral distribution charts.

Description: A special test panel containing a duplicate of the power supply incorporated in the Fluoreter (UV detector-comparator for fluorescence) is used to check each generator. The standard power supply (350 v, 28 ma, at 60 cps) is checked in each case by input meters. While the generator is held in position, the UV is directed at a special fluorescent screen whose visible light output is picked up and rated by a photoelectric unit.

Source: Development of Menlo Research Laboratories, Dept. CP, Drawer 600, Menlo Park, Calif. . . . or for more information check CP 6507 on handy form, pages 2 and 3.

Continuously samples air, recording sulfur dioxide content . . .

both integrating and non-integrating models use same principles in finding 0-5 ppm SO₂

Uses: Designed for continuous recording of sulfur dioxide in the air at usual air pollution concentrations, the range of the instrument is 0 to 5 parts per million sulfur dioxide.

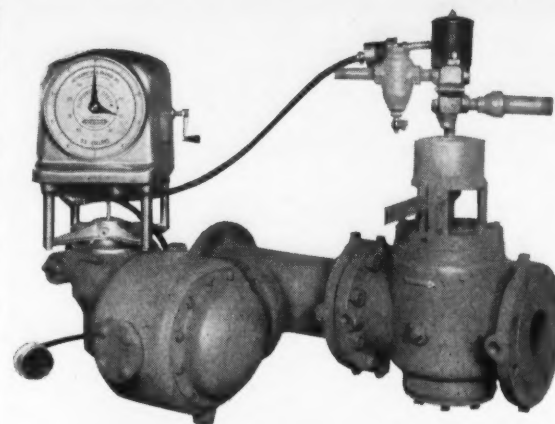
Features: Determination is based on electrolytic conductivity of a solution of sulfate ions which result from treatment of the sulfur dioxide in samples.

Description: Both integrating and non-integrating models of Autometer are available. The integrating model averages concentrations over half hour periods. It also checks the zero reading of the reagents used. Both models, of course, continuously record the sulfur dioxide content of the air. With either model, too, there is an indication of the air sample taken. The integrating model marks off every cubic foot of air taken on the margin of the strip chart. In the case of the non-integrating model, a visual flow indicator serves this purpose.

Heart of both models is a system which pumps a continuous sample of air counter-current to a flow of hydrogen peroxide-sulfuric acid solution in an absorbing column. SO₂ is dissolved and oxidized to sulfate ion. The increased ion concentration is reflected in an increased electrolytic conductivity and shown by a Speedomax recorder calibrated directly in ppm of SO₂.

Mechanism, based on formation of conducting ions, is inherently sensitive to other gases like oxides of nitrogen, HCl, H₂S and ammonia. More common gases like hydrocarbons and CO₂, however, do not influence the reading.

Autometer is supplied as a single unit embodying both the chemical and electrical ends. In sections where corrosion might be a problem, construction is of glass.



AUTOMATIC VALVES

For Hard - To - Reach Places

Automatically operated jacketed valves, which have long been used with H & B Fluidometer metering systems, are now available for use where remote control is required without automatic batching features. See typical application above.

Valves of either straight, 3-way plug cock, or straight globe type are available for steam, air or hydraulic operation. These valves provide the solution to many problems of actuating valves in hard-to-reach places.

Write for Bulletin F1-49.



HETHERINGTON & BERNER INC.

711 Kentucky Ave.

Indianapolis 7, Ind.

When inquiring check CP 6508 on handy form, pgs. 2-3



Before you select a Temperature Regulator, compare low-cost Stacon with the rest. No other regulator has as many features or offers as many advantages as a Farris Stacon.

PROVE IT!

Make this Chekchart Test

	Farris Stacon	Air Operated	Self Operated
• Dirt Proof - Hermetically Sealed?	Yes	.....	.....
• Extreme Accuracy?	± 1°	.....	.....
• Packing or Glands to Leak?	No	.....	.....
• Drop-tight Shut off?	Yes	.....	.....
• Vapor-steam Energized Super Power Pilot?	Yes	.....	.....
• Supervision-Maintenance?	None	.....	.....

Write for Stacon Bulletin 50-1000. It contains complete information on the most sensitive, accurate, economical temperature regulator available . . . anywhere.

Farris Stacon Corp.

506 COMMERCIAL AVE. PALISADES PARK, N. J.

When inquiring check CP 6509 on handy form, pgs. 2-3

This represents the actual size of the housing which totally encloses the Ulanet

MINIATURE THERMOSTAT

MODEL 13

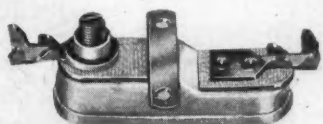
Measure it!

Only 1" L x 5/16" W x 1/4" H

★ And into this tiny space a complete three-element thermostat is housed. Severe temperature changes can't strain the bimetal (principal cause of calibration changes) because of the special strain relief construction. Precision calibration is effected by extra fine threaded adjustment screw. Electrolytic silver contacts are used, too. Temperature ranges up to 400°F. are available.

Here's the mechanically rugged unit you should investigate for positive control. Ulanet engineers will be glad to help you if you state the application you have in mind.

MODEL 13



GEORGE ULANET COMPANY

416 MARKET STREET
NEWARK 5, NEW JERSEY

If your problem is *Heat Control*
your solution is *Ulanet*—
Precision Thermostats & Thermal Timers
Exclusively Since 1931



When inquiring check CP 6510
on handy form, pgs. 2-3

PROCESS INSTRUMENTATION

Metering end uses a standard AC Wheatstone bridge and operates from 115 v, 60 cps. Readings are accurate and reproducible to 0.1 ppm SO₂, and the unit will sense changes as small as 0.05 ppm of the gas. Despite the procedure used in translating presence of the gas into a meter reading, response time is about 30 seconds, or, in cases where a pronounced change in concentration occurs, about 2 minutes for 90% attainment of new level.

Source: Unit is built by Leeds & Northrup Co., Dept. CP, 4934 Stenton Ave., Philadelphia 44, Pa. . . or for more information check CP 6511 on handy form, pages 2 and 3.

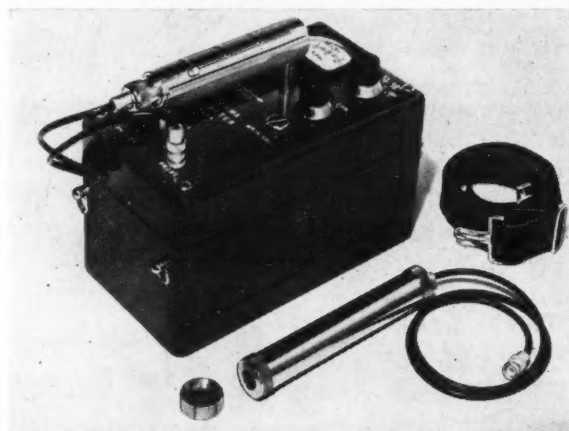
Lightweight, portable meter can be used with alpha, beta or gamma rays . . .

case-mounted specimen provides a constant source for accuracy checks of meter

Uses: Specially designed for use as both a radiation dosage meter and for Civil Defense as a low-level contamination monitor. It has proved helpful in the laboratory for checking glassware, benchtops, clothing, etc., and has also been used for locating small amounts of spilled radiochemicals.

Features: Use of two separate probes allows the meter to be used for total radiation, gamma radiation, or beta and gamma, or alpha and beta radiation. Constant radiation source is supplied with the meter for checking purposes.

Description: Alpha Beta Gamma Survey Meter is waterproof, lightweight and battery operated. It is provided with two sets of scales enabling readings to be



Versatile radiation meter is portable

taken in mr/hr and counts per minute. Milliroentgen per hour scales are: 0.02, 0.2, 2, and 20 while the counts per minute scales run similarly from 100 to 100,000.

P-17 side window probe is equipped with a captive beta shield which permits the separate measurement of gamma radiation in the presence of beta radiation. The other probe, P-18, is an end window type which permits monitoring of low energy beta emitters such as C14 or S35, as well as alpha particles.

Source: Development of Tracerlab, Inc., Dept. CP, 130 High St., Boston 10, Mass. . . or for more information check CP 6512 on handy form, pages 2 and 3.

New POTTER Electronic FLOWMETER and TACHOMETER

Improved design eliminates

- ★ BEARING MAINTENANCE
- ★ HIGH PRESSURE DROP
- ★ BEARING FRICTION



The improved Potter Electronic Flowmeter (patent pending) combines extreme accuracy with freedom from maintenance. This new design eliminates thrust bearings, high pressure drop, and bearing maintenance.

The Potter Flowmeter comprises a flow sensing unit having a hydraulically balanced rotor and magnet rotating within a compact non-magnetic housing, and an external pickup coil connected to an electronic integrator or totalizer, or both.

ACCURATE within $\pm 1/2\%$

Since the novel, high-efficiency rotor spins in a freely balanced position within a venturi, its blades operate with practically no slippage. Fluid viscosity, pressure, temperature, and specific gravity only slightly affect the volumetric flow rate. Accuracy is maintained within $\pm 1/2\%$. Electric impulses from the rotor are conducted to a combination electronic integrator and totalizer. Rate of flow can be read or recorded either directly or remotely, and total flow is indicated on a resettable magnetic Veeder-Root counter.

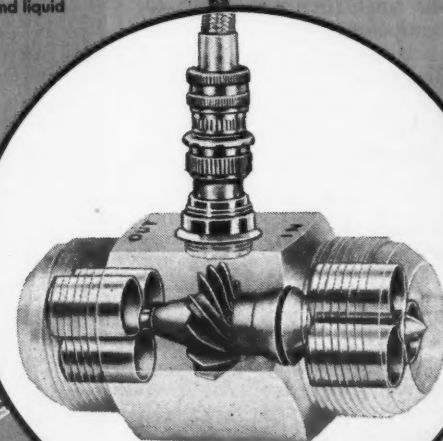
We will gladly help you solve your flow measuring problems.

APPLICATIONS

Potter Flowmeters accurately measure flow. Especially suitable for highly corrosive liquids, gases, acids and liquid oxygen.

SEND FOR NEW BULLETIN 1050

which gives full information, pressure drop chart, ranges, sizes, and operational data.



POTTER AERONAUTICAL CO. 81 Academy St., Newark 2, N. J.

When inquiring check CP 6513 on handy form, pgs. 2-3

Air and hydraulic facts presented

Pocket-size booklet presents installation and servicing data in a "do" and "don't" style. This is a reprint of the original booklet issued in 1949. "The Facts of Life on Air and Hydraulic Devices" is issued by Logansport Machine Co., Inc., Dept. CP, Logansport, Ind. When inquiring specify CP 6514 on handy form, pages 2 and 3.

Inexpensive instrument checks viscosity in 40 seconds . . .

timed flow of liquid through hole in cup bottom gives data

Uses: Used wherever quick viscosity determinations are needed in the broad medium viscosity range. Can be used as a rule-of-thumb analysis for solvent content, etc.

Features: Tests can usually be made in 20 to 40 seconds.

Description: Zahn viscosimeter operates on the familiar principle of allowing the liquid to be tested to flow through a calibrated orifice in the bottom of a metal cup. Time from start of flow until the first break, in seconds, is related by graphs, supplied with the instrument, to centipoises.

Instrument is one piece with round bottom cup supported by a loop of metal rod. At the top is a ring which, used as support point during the test, insures that cup hangs vertically. Size of orifice controls the range for which any particular instrument is suited. Standard units cover the range from 20 to well over 1200 centipoises.

Source: Available from Henry A. Gardner Laboratory, Inc., Dept. CP, 4723 Elm St., Bethesda 14, Md. . . . or for more information check CP 6515 on handy form, pages 2 & 3.

Shows temp controller, $\pm 0.50^\circ\text{C}$ sensitivity

Varied items of laboratory equipment are featured in this 15-page bulletin, including flame photometry attachment for Beckman DU spectrophotometers, flexible heating tapes for standard or odd-shaped vessels, melting point meters and safety containers of polyethylene. The electronic temperature controller has a range of 0 to 500°C and is suitable for control over long periods of time. Sensitivity is $\pm 0.50^\circ\text{C}$.

Also there are vertical autoclaves, spray for reducing airborne bacteria

Look at the Whole Picture...

WHEN SELECTING LEVEL CONTROLLERS

Use the C_Q Method—Evaluate All the Quality Factors

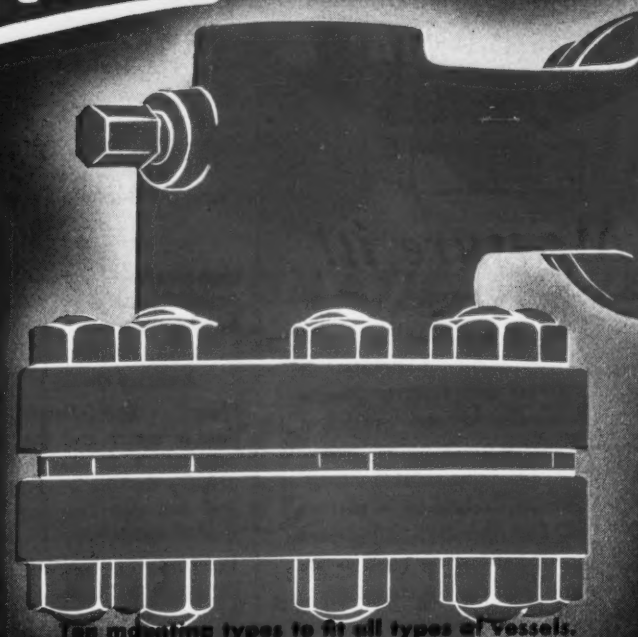
One well designed and manufactured part does not make a level controller that will "provide accurate performance over a long period with a minimum of maintenance and operation delays." Every part must be designed and manufactured so that all combine to make a controller which incorporates wise selection of materials for the intended service; skillful design for accurate operation; and experience which forestalls the difficulties you are likely to encounter in the field.

So in selecting level controllers, use the C_Q Method — evaluate *all* the quality factors in relation to your standards. The sum of the value of all these factors is the C_Q (Quality Coefficient). A product with a high C_Q will give you the performance you have a right to expect. And in considering price, don't forget the over-all cost* is lowest for a high C_Q product. For comparison purposes — among comparably priced controllers

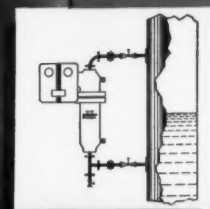
$$\text{Real Cost} = \frac{\text{Price}}{C_Q}$$

Look at the whole picture — use the C_Q Method — evaluate *all* the quality factors.

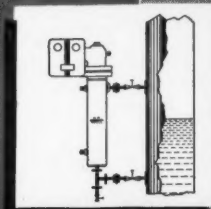
*Purchase price plus cost of maintenance and down-time.



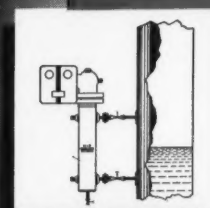
Ten mounting types to fit all types of vessels.



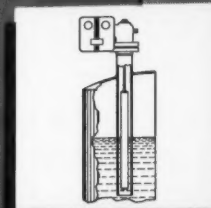
Top and Bottom
screwed or flanged



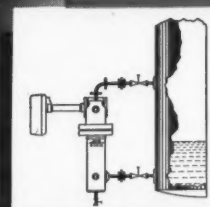
Side and Bottom
screwed or flanged



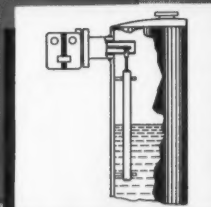
Side and Side
screwed or flanged



Top Vessel
flanged



Top and Side
screwed or flanged

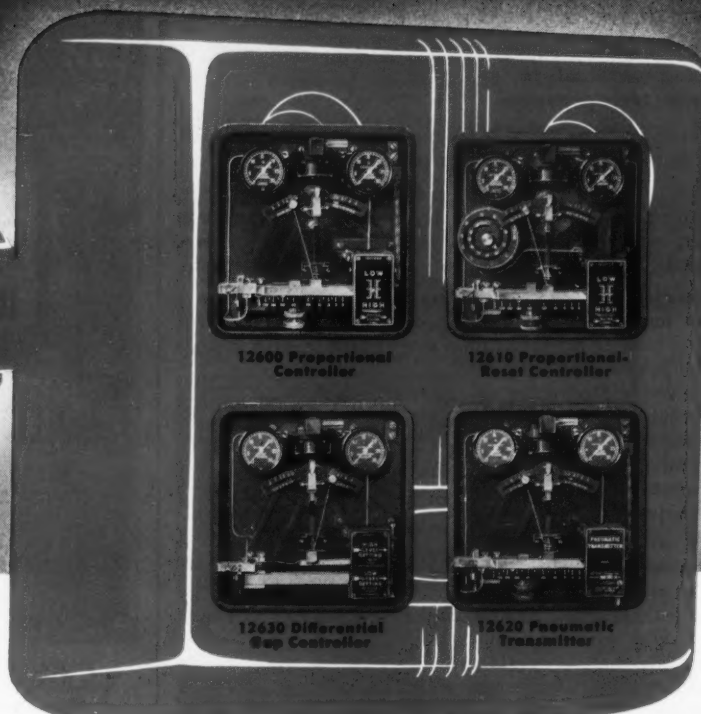


Side Vessel
flanged

THE MASONEILAN

12000 SERIES LEVEL CONTROLLERS

A High C_Q Product



Three Standard controller types and the transmitter (also pneumatic switch) in the standard case; dual or duplex combinations of these in a larger case.

Automatic Reset Mechanism: Adds reset response to proportional response. Simple unit adjustable over spiral scale with wider graduation spacing in lower reset rate settings.

Differential Gap Mechanism: Substitutes proportional on-off action for standard proportional action. Provides for adjustable gap between high and low limits.

Selection of Supplementary Functions: Design provides for pneumatic transmitter, pneumatic or mechanical signal switch using same torque tube and displacer assemblies.

Dual and Duplex Types: Selection of combinations of control mechanisms, controller plus transmitter, controller plus switch, etc. — in one case; using only one torque tube assembly.

Simple Mechanical Indicator inside case provides serviceman with reliable, direct indication of level; has no complicated linkage — requires no field calibration.

Torque Tube Assembly design provides (a) selection of materials — inconel, monel, stainless steel, bronze.

(b) all parts of torque tube subassembly of same alloy — avoids contamination of the weld.

(c) fabrication by latest type inert arc welding equipment and methods.

(d) knife-edge bearing at each end insures true center of rotation — cannot be off-centered by high temperature or practical tolerances in fabrication — eliminates objectionable friction.

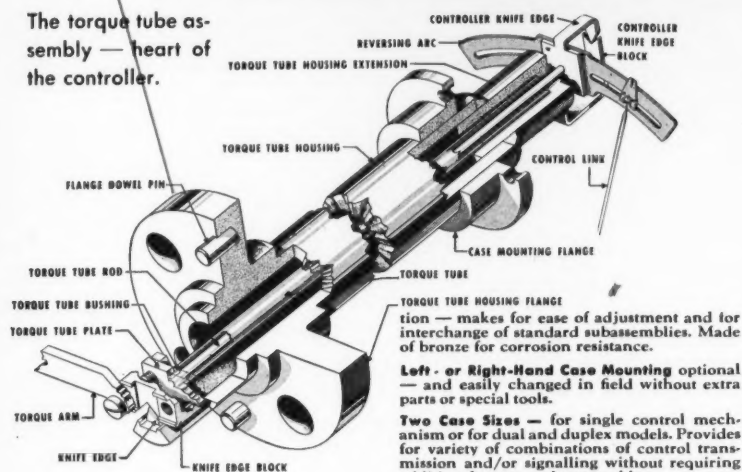
(e) Torque tube length, wall thickness and diameter selected for most desirable combination of low operating stress and load carrying ability.

Displacer Hanger has modified knife-edge bearing at connection to torque arm. Integral or detachable extensions available for internal mounted displacers.

Displacers made of stainless steel tubing; designed so that standard control mechanisms may be used without modification, for all applications.

Selection of Mounting Types available to meet all vessel requirements. Choice of 9 Level Ranges between 14' and 15 ft. (standard). Special ranges may be supplied.

The torque tube assembly — heart of the controller.



tion — makes for ease of adjustment and for interchange of standard subassemblies. Made of bronze for corrosion resistance.

Left- or Right-Hand Case Mounting optional — and easily changed in field without extra parts or special tools.

Two Case Sizes — for single control mechanism or for dual and duplex models. Provides for variety of combinations of control transmission and/or signalling without requiring additional torque tube assembly.

Large Capacity Relay-type Pilot: Design insures instant response to variations in nozzle pressure. Includes metering tube for constant nozzle supply. Fastening directly to manifold avoids air piping. Uses minimum air supply.

Simple Proportioning Mechanism: Minimum number of parts, simplified linkage, use of proportional leaf spring — insure instantaneous response. All adjustments simple, with clearly visible scales. Action reversible by one simple adjustment. Proportional band setting independent of specific gravity; scale provides wider graduation spacing in lower settings; causes minimum upset to process because alignment spring, leaf spring and proportional bellows forces in equilibrium at midpoint of output pressure range. Simplified linkage and flexure bearings eliminate lost motion.

Note the Quality Factors of the Masoneilan 12000 Series Level Controllers

Sturdy Instrument Case with ribbed reinforcements to prevent distortion due to temperature and handling which might create inaccuracy in control mechanism. Aluminum with Weatherproof finish and Gasketed door — protect against effects of weather and corrosive atmospheric conditions.

One Piece Air Manifold eliminates much of air piping inside case — simplifies construction.

MASON-NEILAN REGULATOR CO.

1203 Adams Street, Boston 24, Mass., U. S. A.

PROCESS INSTRUMENTATION

and a portable kit which permits routine testing of 7 constituents of urine in one minute. "What's New for the Laboratory" is issued by Scientific Glass Apparatus Co., Inc., Dept. CP, 100 Lakewood Terrace, Bloomfield, N.J. When inquiring specify CP 6516 on handy form, pages 2 & 3.

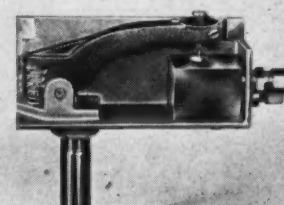
Excessive temperature operates pilot valve pneumatically . . .

device can be used to control motor, diaphragm valve

Uses: Controller can be used to stop motors, close valves, etc., when dangerous temperatures are reached. It can also be used as the control element of a temperature system from below zero to 1400°F, or 2000°F with modifications.

Features: Entirely pneumatic.

Description: Pneumatic Temperature Control and High Temperature Safety Cut Off operates on the principle of differential expansion



Temperature controller with no electrical components

of metal tubes. With standard tubes the model HA provides a temperature range of below zero to 1400°F. Special tubes will carry this range to 2000°F. A lever multiplies the expansion many times so that an actual expansion of 0.005 to 0.006" is sufficient to trigger the pilot valve of the controller. Since this pilot valve handles a standard 15 psi air line, diaphragm valves, motor control and other equipment can be used with it.

Development of this unit was made particularly for installations where electrical systems would involve a fire hazard.

Source: Developed by Burling Instrument Company, Dept. CP, 5 Vose Ave., South Orange, N. J. . . . or for more information check CP 6517 on handy form, pages 2 and 3.

For more information on product at left, specify CP 6518 . . . see information request blank between pages 2-3.

Sales Offices or Distributors in the Following Cities: New York • Syracuse • Chicago • St. Louis • Tulsa • Philadelphia • Houston • Pittsburgh • Atlanta • Cleveland • Cincinnati • Detroit • San Francisco • Salt Lake City • El Paso • Boise • Albuquerque • Charlotte • Los Angeles • Denver • Appleton • Corpus Christi • New Orleans

CENCO ELECTROANALYZER

rapid analysis of metals

The Cenco Two-Unit Electroanalyzer saves time in the quantitative electroanalysis of metals. Independent controls provide current up to 5 amperes to each or both stations simultaneously. Meters indicating volts and amperes are mounted with selector switch on the front panel.

Polystyrene electrode holders resist corrosion, facilitate adjustment of electrodes, and provide effective clamping. This improved unit is highly recommended for chemical analysis of zinc, base die casting alloys (ASTM E47-45),



copper and lead in aluminum alloys (Aluminum Research Institute Methods Cu 2-47 and Pb 2-47), copper in ferrous metals (ASTM E30-47), copper and lead in brasses (ASTM E36-45). Also available in a six-station model.

Write for descriptive circular 1200

CENCO

CENTRAL SCIENTIFIC COMPANY

Scientific Instruments • Laboratory Supplies
1700 Irving Park Road • Chicago 13, Illinois



Refinery Supply Company
Tulsa, Oklahoma

CHICAGO-NEWARK-BOSTON-WASHINGTON
DETROIT • SAN FRANCISCO • SANTA CLARA
LOS ANGELES • TORONTO • MONTREAL
VANCOUVER

When inquiring check CP 6519 on handy form, pgs. 2-3

Announcing the COLEMAN Model 19

AUTOTRATOR*

A REALISTIC approach to automatic titration

FOR THE FIRST TIME—a Practical instrument for automatic performance of laboratory titrations. Practical, because it does a definite laboratory job, faster and better than it can be done manually; because it is easy to use; fits existing laboratory environment; meets actual laboratory needs.

FOR THE FIRST TIME—real savings, true economy from automatic operation, even for the small laboratory; because the Autotrator is properly priced, easy to use; practical for every-day laboratory operations; because it is rugged, dependable and ready for instant use.

Find out what Realistic design of automatic equipment can mean to your laboratory costs.



Write for bulletin DB-223

COLEMAN INSTRUMENTS 515 MARION ST. MAYWOOD, ILLINOIS

*Trademark registered U. S. Patent Office.

When inquiring check CP 6520 on handy form, pgs. 2-3

PROCESS INSTRUMENTATION

300 lb now top range for testing materials in tension, compression . . .

improved tester also has new drive; is able to test heavier materials than its predecessors

Uses: For testing a wide range of materials (rubber, paper, ceramics, springs, leather, felt, insulation, plastics, fibers, wire, fabrics, adhesives, etc.) in compression, tension, transverse, or shear.

Features: Improvements are incorporated in maker's latest tester — 1) A 0-300 pound scale is suitable for testing heavier materials than were possible with former 0-100 pound unit. 2) An improved motor drive assures full torque up to 300 pounds direct loading, and stepless speed control operable from 0 up to 20 inches per minute.

3) A solid shaft connects the speed control to the motor transmission, eliminating the former flexible shaft and offering more positive and accurate speed setting without danger of overruns. 4) Quadrant arm is now one continuous casting that affords greater rigidity and consequently smoother autographic stress-strain curves. 5) Speed control dial is now mounted on top of the tester base instead of on front of the machine, offering greater ease in reading and adjusting settings.

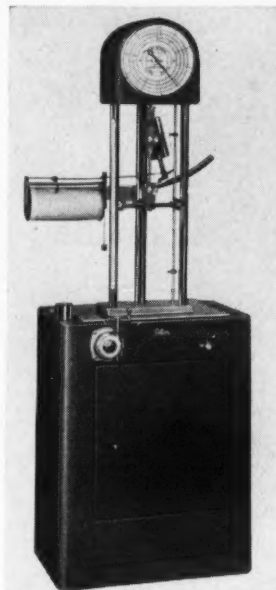
Description: Other improvements in the new Multi-Low-Range Universal Tester include lesser changes in mounting, castings, and finish. Special gripping fixtures are offered by maker. A hand operated tester is also available.

Source: Full details are available from W. C. Dillon & Company, Inc., Dept. CP, 1421 S. Circle Ave., Forest Park, Ill. . . or for more information check CP 6521 on handy form, pages 2 and 3.

Indicator monitors speeds of 2 to 10 machines

Two-page sheet explains tachometer indicator which monitors speeds of 2 to 10 remotely located machines from a central location. Points out that instrument is not complete tachometer in itself but requires a tachometer head at each machine to convert rotation to a measurable electric current. Tachometer heads can be located up to 1000 feet from indicator in any direction, and various type heads permit direct measurement from any speed between 1/10 and 100,000 rpm without requiring speed changing drives.

Different scales are available and marked and calibrated for direct reading in any units, such as rpm, fpm, inches/sec, tons/hr, etc., or any quantity which is proportional to speed actuating tachometer heads. Indicator ordinarily operates from 115 volts AC but can be supplied for opera-



Has important improvements over its predecessors for testing materials in tension, compression, transverse, or shear

You Get Even, No Glare
LOW COST LIGHTING
for Gages, Rotameters, etc.
with

JERGUSON Explosion-Proof GAGE ILLUMINATORS

Single and Double Section
Jerguson Illuminators on a
3-Section Gage.

UNDERWRITERS'
LABORATORIES
APPROVED

YOU get even, no glare, Low Cost Lighting with Jerguson Gage Illuminators . . . the improved illuminators that are unexcelled for gages, rotameters, etc. They give you ideal illumination with safety . . . and make possible faster, easier, accurate reading.

Jerguson Illuminators use the principle of solid wedge lighting to give you clear, even lighting, without bright spots. Light flows through the plastic wedge and is reflected evenly. A single small bulb gives you better illumination at a cost so low that savings quickly pay for the illuminator.

Jerguson Illuminators are approved by Underwriters' Laboratories and are built in accordance with their Standard for Electric Lighting Fixtures for use in hazardous locations for Class 1, Group D Services. Made in a variety of sizes; also available in a non-explosion proof model.

Investigate Today. Write for Data
Unit on Jerguson Illuminators

JERGUSON

Gages and Valves for the
Observation of Liquids and Levels

JERGUSON GAGE & VALVE COMPANY
100 Fellsway, Somerville 45, Mass.

Representatives in Major Cities
Phone Listed Under JERGUSON

Jerguson Tress Gage & Valve Co. Ltd., London, Eng.

When inquiring check CP 6522
on handy form, pgs. 2-3

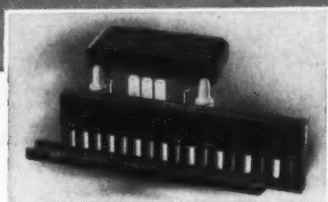
CHEMICAL PROCESSING

ONLY TAYLOR COMPARATORS

Provide

**PERMANENTLY
GUARANTEED
COLOR
STANDARDS**

For Testing
**pH, CHLORINE,
PHOSPHATE**



Simply place reagent treated sample in middle tube in base, move Color Standard until colors match and . . .

There's the Value!

There's no danger of mechanical inaccuracy when you use Taylor Comparators for determining pH, chlorine or phosphate, because *all Taylor liquid color standards carry an unlimited guarantee against fading.*

One sturdy plastic slide houses all color standards necessary for any one determination. No fragile single standards to handle! Each complete set includes base, slide, reagents and accessories: The utility of these sets is high, but their cost is low.

SEE YOUR DEALER FOR TAYLOR SETS--
WRITE DIRECT FOR FREE DATA BOOK

Gives 96 pages of helpful technical data on "Modern pH and Chlorine Control" in 34 basic manufacturing processes. Write today if this valuable reference is not already in your library.

W. A. TAYLOR AND CO.
YORK & RODGERS FORGE Bldg. • BALTIMORE-4, MD.

When inquiring check CP 6523 on handy form, pgs. 2-3

PROCESS INSTRUMENTATION

tion at other voltages. Power consumption is about $\frac{1}{2}$ watt. Technical Data Sheet 42R is issued by Metron Instruments Co., Dept. CP, 432 Lincoln St., Denver 9, Colo. When inquiring specify CP 6524 on handy form, pages 2 and 3.

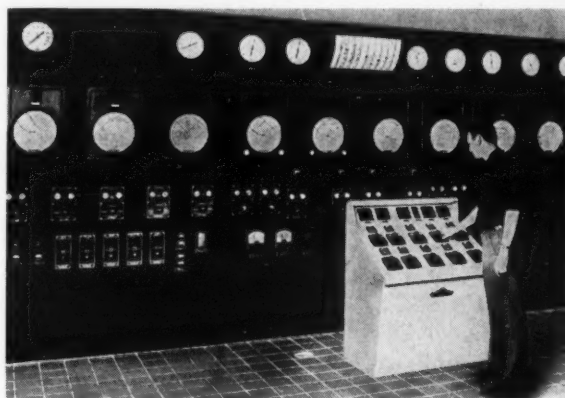
**Size of control panels
cut 2/3 by midget
instruments . . .**

one multi-point indicator occupies only 13% the space of its standard size counterpart

Uses: Line of control instruments for process variables.

Features: Due to small size of instruments, size of control panels can be reduced by as much as two-thirds. For example, one of the tiny instruments, a multi-point indicator which can indicate at one time the measure of any number of related factors, actually uses only 13% of the control panel area used by its standard size counterpart.

Description: In an ideal setup, these Mini-Line instruments are mounted on a panel similar to an organ console (see photo). Concentrated into this small space be-



Comparison of control panel utilizing instruments of conventional size versus a console type panel with Mini-Line equipment. Approximately the same number of measurements and control stations are provided on each panel of this installation

fore a single operator are all controls and information necessary to operate process units. From here, the operator can place the entire plant on automatic control or he can control individual units or the entire system manually.

Source: Bailey Meter Company, Dept. CP, 1050 Ivanhoe Rd., Cleveland 10, Ohio. . . or for more information check CP 6525 on handy form, pages 2 and 3.

Describes electronic control of air humidities

Four-page bulletin explains the incorporation of a humidity sensing element with a potentiometer for hygrometric measurements. Descriptive material covers the various components of system along with accompanying photographs. Two schematic drawings are included showing the control elements in a typical central air-conditioning system. Applications, advantages and general specifications round out the report. Data sheet 10.5-4 is issued by Brown Instruments Division, Minneapolis-Honeywell Regulator Company, Dept. CP, Station 40, Wayne and Windrim Aves., Philadelphia 44, Pa. When inquiring specify CP 6526 on handy form, pages 2 and 3.

B

ECKMAN

—and only Beckman—

**provides such wide range versatility
in Glass pH Electrodes . . .**

The importance of modern pH equipment is widely recognized in many fields . . . from food processing to sewage treatment—mining and smelting to electroplating—textile manufacturing to sugar refining. But when considering pH equipment for your problems always remember this . . .

"No pH meter is better than electrodes designed for use with it!"

Only Beckman provides such a wide variety of versatile, accurate and dependable electrodes—a type to meet virtually every industrial, research, laboratory and medical requirement. This is your assurance that, in Beckman pH equipment, you have maximum adaptability to widely-varying pH applications.

FREE . . . a convenient 28-page catalog illustrating the complete line of Beckman electrodes and pH equipment is available from your authorized Beckman Instrument dealer. Or write direct!

Whatever your pH electrode requirement, contact Beckman.

**BECKMAN
INSTRUMENTS
INC.**

SOUTH PASADENA 11, CALIF.
Factory Service Branches: Chicago • New York • Los Angeles

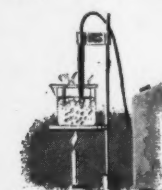
Beckman Instruments include: pH Meters and Electrodes—Spectrophotometers—Radioactivity Meters—Special Instruments

Typical Advantages of Beckman Electrodes



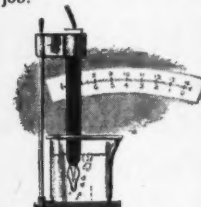
Virtually Unbreakable

Where abrasive slurries or rough industrial service are problems, Beckman has the answer with electrodes so strong, so tough, so chemically-resistant to alkalies and acids they set entirely new standards of durability!



Extreme Temperatures

Want to make measurements in solutions as cold as 20°C. below zero . . . or as hot as 130°C. above? Hot, cold or in-between, there's a Beckman pH Electrode to do the job!



Wide pH Range

Electrodes covering the full pH range permit accurate measurements even at extreme limits with negligible sodium ion error whether test solution is hot or cold!

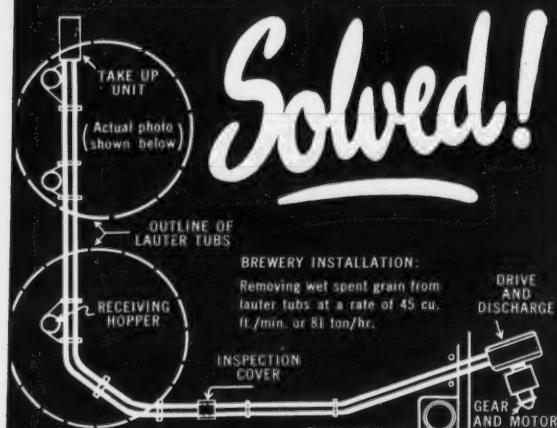


Unique Construction

Beckman glass electrodes are factory-sealed, require no maintenance, feature patented internal shielding, heat-resistant construction, integral leads and many other advantages!

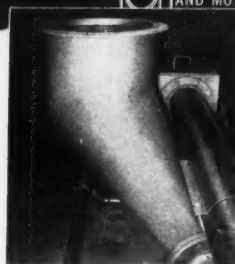
When inquiring check CP 6527 on handy form, pgs. 2-3

ANOTHER MATERIAL HANDLING PROBLEM



Solved!

WITH A **Hapman** TUBULAR CONVEYOR



Actual photo of one
Receiving Section
and Take-up Unit

THE MODERN METHOD OF HANDLING WET OR DRY FLOWABLE MATERIALS

Hapman Conveyors consist of regularly spaced, circular flights or discs mounted on a special sealed pin chain operating within standard pipes or tubing. Hapman Conveyors operate efficiently with great flexibility of application in planes and angles utilizing minimum space and support requirements. They offer the maximum in sanitation, odor and explosion control because they are dust, vapor, and moisture tight. Power consumption is surprisingly low.

Hapman Tubular Conveyors are engineered to your particular material handling job. If you have a material handling problem, send a print or sketch and our engineers will submit a solution.

The wide range of materials that can be handled with efficiency and low cost by a Hapman Conveyor is illustrated by the following partial list:

STARCH — FLOUR — CHEMICALS — METAL CHIPS — WELDING FLUX — SLAG AND FOUNDRY SAND — GRINDING SLUDGE — GLASS CULLETT — MALT — COAL — TACKS — DUST.

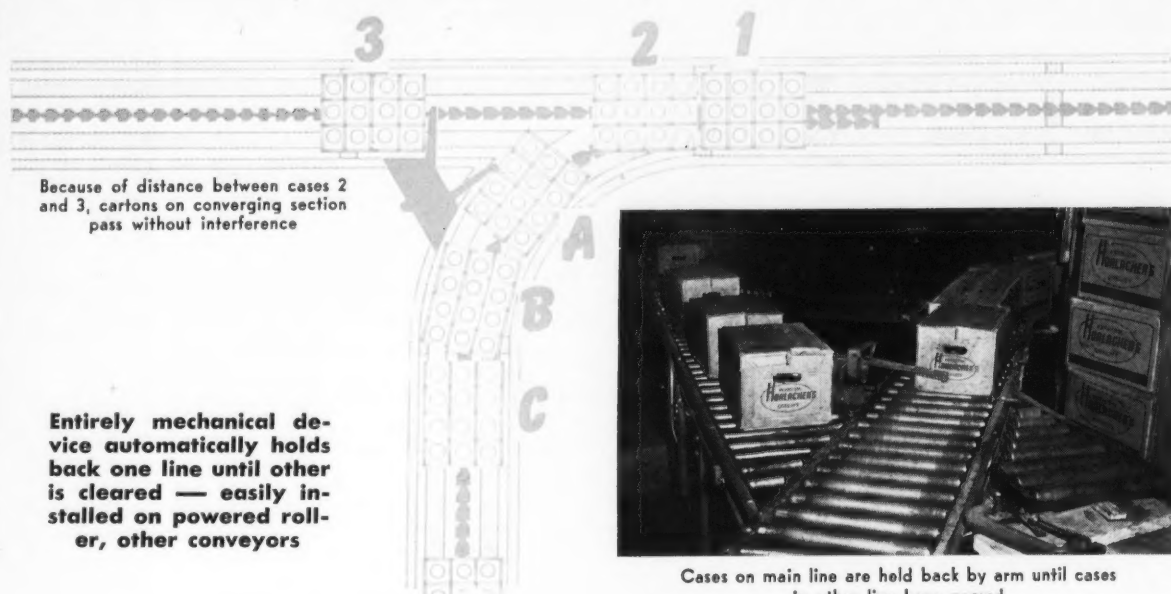
Investigate the many advantages of Hapman Conveyors — write today for catalog giving details of construction and applications.



Hapman CONVEYORS, INC.
DIVISION HAPMAN-DUTTON COMPANY
KALAMAZOO MICHIGAN

When inquiring check CP 6528 on handy form, pgs. 2-3

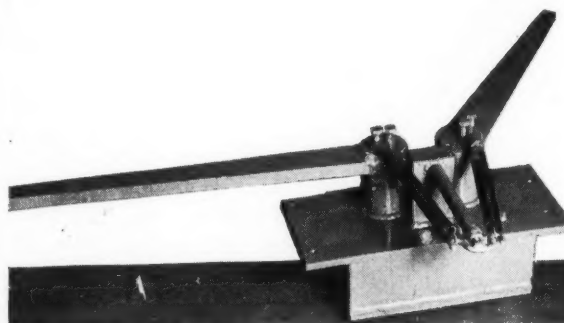
Material Handling



Entirely mechanical device automatically holds back one line until other is cleared — easily installed on powered roller, other conveyors

Cases on main line are held back by arm until cases in other line have passed

No Traffic Jams When 'Stop and Go' System Polices Merging Conveyor Lines



Conveyor line control arms are actuated by cams inside housing

Being entirely mechanical, no electrical equipment or apparatus is involved.

Description: Conveyors must be of powered type and both conveyor sections must be powered for at least double the length of the largest unit load. Degree of merge of one conveyor with another is not too critical, but normally a 30° merge is recommended for the best results.

Only four bolts are required to install the device. Arms are actuated by means of cams inside the main housing on which control arms are mounted. These cams operate in an oil bath to assure their free and positive movement at all times.

View in a Pennsylvania plant, shown here, illustrates how one arm holds back cases on main section while those on other section continue to move until all cases in the group have passed. When this line is cleared, arm that has been held back swings into position across main conveyor. This permits pressure on arm across merging line to force it aside and allow accumulated packages to move along. Drawing shows a two-chain conveyor with a live 90° turn. The control operates satisfactorily at this and other angles, but 30° is the most desirable.

Source: "Ultimate Traffic Cop" is built by the Island Equipment Corp., Dept. CP, 27-01 Bridge Plaza North, Long Island City 1, N. Y. . . . or for more information check CP 6529 on handy form, pages 2 and 3.

USES: For controlling flow of packages, cases, cans or cartons at merging point of two power conveyors. Can be used with converging sections of powered live roller, belt or chain conveyors. Either main line, or auxiliary line, is held back, while flow of packages continues on the other until there is a break in the flow, or line is completely cleared.

Alternate flow of one package from each line can be achieved when packages are spaced at a distance equal to package length.

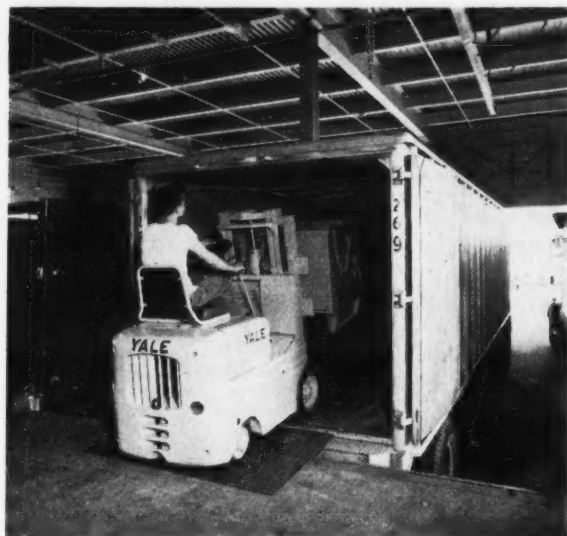
Features: Easy to install. Operation is simple.

**Easier to load box cars, trailers
when fork trucks are light weight,
low in overall height . . .**

difficulties of limited overhead clearance, close quarters dictate design of special models

Uses: Designed specifically for operation in and around highway motor trucks to meet such desired specifications as low weight, low overall height and maneuverability.

Features: Height is only 68" when telescopic lift is collapsed. In "duplex" models, truck can elevate its the height. This allows two-high stacking inside street forks 54" before the secondary channels rise to increase



Fork truck is tailor made for trailer loading

truck bodies. Overall length, without forks is only 58 1/4". All controls are of automotive type.

Description: Trucks are built in capacities up to 2,000 lb. Power impulses from engine are transmitted through triple reduction spur and hypoid gears to drive axle. Drive axle is enclosed in an oil-tight housing and is the full-floating type with involute spline shafts. Hydraulic brakes follow automotive practice. Truck width is 33 1/2". Maximum lift height is 108". Lifting speed (empty) is 45 fpm. Speed (governor controlled) is 7.5 mph.

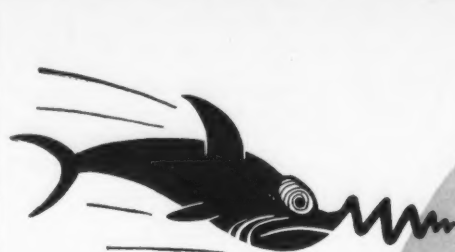
Source: "Trucker" gasoline fork trucks are built by Yale & Towne Mfg. Co., Philadelphia Div., Dept. CP, 11,000 Roosevelt Blvd., Philadelphia 15, Pa. . . or for more information check CP 6530 on handy form, pages 2 and 3.

Case study summarizes benefits of industrial truck use

Case study report of results obtained from industrial truck usage in a metal fabricating plant is contained in a two-page sheet. Eight photographs along with accompanying descriptive material are used in showing the duties performed by the trucks in the installation.

Listing of benefits derived show: save time and labor in unloading, transporting and storing; cut raw material costs by making it practical to buy steel in full-width coils or large sheets; and integration and mechanization of all handling. Report #241 is issued by Baker Industrial Truck Division, The Baker-Raulang Company, Dept. CP, 1250 W. 80th St., Cleveland 2, Ohio. When inquiring specify CP 6531 on handy form, pages 2 and 3.

SEPTEMBER, 1951



built to take it! sharkcraft

THE ALL-CRINKLED MULTIWALL BAG

Chase Sharkcraft sharply reduces costly breakage . . . it is, indeed, BUILT TO TAKE IT! Available in 2 to 5 plies of extra strong crinkled kraft. Furthermore, it provides a sure grip . . . it's easier to handle and stack, and you'll like the sharp, colorful printing of this better container.

Get full details on Chase Sharkcraft from your Chase Salesman—and be sure of the most efficient container for your product. He is supported by more than 100 years of experience in providing better bags for American industry and agriculture.

Bags for All Industry and Agriculture

- cotton bags of all kinds
- Topmill burlap bags
- Saxolin open mesh bags
- paper and Multiwall bags
- combination bags, liners and specialties



Check with your Chase salesman
or mail this coupon TODAY!

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Gentlemen: Please send me more information about SHARKCRAFT bags

for the packaging of.....
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OKLAHOMA CITY • PORTLAND, ORE. • REDSVILLE, N. C. • HARLINGEN, TEXAS • CHAGRIN FALLS, O. • WORCESTER, MASS. • CROSSETT, ARK. • SAN FRANCISCO

When inquiring check CP 6532 on handy form, pgs. 2-3

CUTS COSTLY BREAKAGE IN THE PACKAGING OF...

- Farm Products
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- Seeds • Chemicals
- Pharmaceuticals
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- Rock Products
- Meat Scraps and Tankage
- Starch Products

NO. 2
OF A SERIES
ON HOW TO
**Stretch a
MULTIWALL
Paper Bag**



Kraft paper supplies are short. So it is important for you to get the best use from your multiwalls. Here is one way to stretch them...

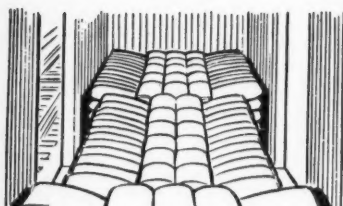
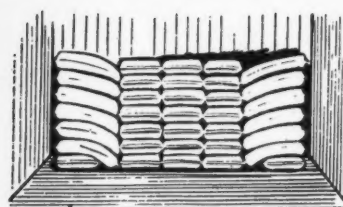
PROPER CAR LOADING

PREPARATION IS IMPORTANT

Cars should be clean, dry, and free from protruding nails or other projections. Remove all dirt, dust, rocks and grit. Remove loose nails and cover loose bolts with cardboard or several thicknesses of car liner. (Picture shows how to use straight-edge board to locate protruding nails, etc.). Cover floor (and walls, if necessary) with good grade of car liner and put at least three thicknesses on door edges. Use asphalt-laminated paper to seal door cracks.

FOLLOW THESE LOADING RULES:

- 1 The car should be loaded so that the filled bags will not come in contact with side doors. a. Use a good grade of dunnage in the doorway or steel strapping covered with corrugated board. b. Follow proper loading patterns. (Illustrated.) c. Use retaining strips of special Scotch tape applied across the load, or steel retaining straps covered by one thickness of corrugated board.
- 2 Bags should be loaded tightly, solidly and flat, to minimize shifting.
- 3 Balance the load from end to end and side to side. There are, in general, three loading methods—crosswise, brickwall and lengthwise. Crosswise is generally preferred. Loading in car doorways should be done so that this part of the load acts as a keystone between the end loads. (See illustration.)



Want the Whole Story?

Ask your Bemis Man for free, illustrated copy of Bemis Multiwall Packaging Guide. It deals with Storage, Filling and Closing, Handling, Palletizing and other important subjects.

Maybe Cotton Bags are Your Answer ... if you can't get all of the multiwalls you need. Cotton bags are available ... and Bemis is the leading cotton bag source.

Bemis



St. Louis 2, Missouri

When inquiring check CP 6533 on handy form, pgs. 2-3

MATERIAL HANDLING

Stabilize narrow lift truck with spring mounted casters to prevent tilting...

platform is 18" wide and furnished in 6, 7, 9, 11" lowered heights to engage conventional platforms

Uses: Because of narrow platforms, these trucks are able to maneuver to maximum advantage in close quarters and in various applications involving handling limitations.

Features: Set of stabilizing casters are placed on each side of unit to overcome tendency of such a narrow model to tilt in making sharp turns. These casters are spring mounted, and in normal operation completely clear the floor. They are called into action only when the unit tilts, whereupon heavy springs return it to normal position.

Description: Truck is battery-operated and features



Truck features 3-way operating positions

3-way operating positions which provide safety, maneuverability and driver comfort.

Truck rolls on large capacity cushion rubber wheels with sealed ball bearings. Models are available with platforms of conventional width. Also as a pallet truck for handling double-faced pallets, as a freight and pick-up truck, as a tractor and as a fork truck.

Source: Loadmobile is built by Market Forge Co., Dept. CP, Everett, Mass. ... or for more information check CP 6534 on handy form, pages 2 and 3.

Smaller battery charger saves floor space, hangs on wall...

smaller than most conventional units, this M-G set hangs on wall or sits on shelf

Uses: Used for charging batteries; handles 6-19 lead-acid cells or 10-30 nickel-iron-alkaline cells used in most industrial trucks.

Features: Designed to be mounted on a shelf or support on a wall, the charger is about the size of a tank type vacuum cleaner.

Description: Charger is of the motor-generator type. Weighing only 190 lb, it can be mounted on a shelf measuring 6-3/4 x 8-1/4". Unit is fully automatic and easy to operate. Operation consists of plugging it into a 3-phase, 60 cps line and setting the timer.

Protection from external damage to the charger is pro-

FREE!
clip, check + mail

THESE FREE FOLDERS

will show you how to speed processing, improve quality, reduce costs!

check the ones you want - clip this entire coupon -
MAIL TODAY!

☐ **Metallic Filter Cloth Bulletin No. 81.** Illustrates and describes most widely used types of filter screens and leaves for breweries, chemical plants, sugar refineries, sewage plants and others.

☐ **Woven Wire Conveyor Belts Bulletin No. 82.** Technical charts set forth Comparative Ultimate Strengths of Rod-Reinforced, Balanced and Sectional Belt weaves in meshes from 1" to 1/4" mesh.

☐ **Woven Wire Conveyor Belt Bulletin No. 86.** Illustrates and describes conveyor belt installations in glass plants, bakeries, rubber manufacturing, ice cream plants and food packing.

☐ **Woven Wire Conveyor Belt Bulletin No. 89.** For food and pottery plants. Describes belt uses and also shows special belt attachments and selvages.

☐ **Metal Specialties Bulletin No. 99.** Describes and illustrates Cambridge facilities for design and fabrication of metal specialties for handling bulk parts through hot, cold, abrasive, corrosive or wet processes.

Can one of these help you? Or two? Or a whole set? Simply check the ones you want, fill in your name and address below, clip the entire advertisement and mail today to,

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The Cambridge Wire Cloth Co.

Dept. F • Cambridge 9, Md.



WIRE CLOTH METAL CONVEYOR BELTS SPECIAL METAL FABRICATIONS

OFFICES IN PRINCIPAL INDUSTRIAL CITIES See "Wire Cloth" in your Classified Telephone Directory.

clip, check, mail

When inquiring check CP 6535 on handy form, pgs. 2-3

CHEMICAL PROCESSING

HERCULES CARBOY BOXES

give you
**EXTRA
PROTECTION**

**6½
GALLONS**



Completely enclosed wooden carboy box complying with I.C.C. I-D regulations for transporting mineral acids. Convenient corner posts allow one man to handle carboy and flat top provides for compact storage. Designed with interchangeable cork (Hercules) or rubber cushion (Aero) inserts and cushions.

SPECIFICATIONS

BOX SIZE: 13¾" x 13¾" x 22"
including hood (I.D.)

WEIGHT: Approx. 26 lbs. (Box)
Approx. 14 lbs. (Bottle)

CARBOY: 6½ gals. normal capacity, 17 gals. overflow

COMPLIES WITH CLASSIFICATION
I.C.C. I-D.

**PROMPT
DELIVERY**

Carboys also
supplied in 13
gal., 5 gal.
and other
capacities.

**NATIONAL
BOX & LUMBER COMPANY**
NEWARK 5, NEW JERSEY



When inquiring check CP 6536
on handy form, pgs. 2-3

SEPTEMBER, 1951

MATERIAL HANDLING

vided by completely enclosed construction, yet maintenance is not difficult because of easy accessibility of control parts, commutator, and brushes. Mounting feet are integrally cast with the frame so that no special foundation is needed. Permanent bearing alignment, established at the factory, cannot be disturbed during mounting.

Source: Development of General Electric, Dept. CP, Schenectady 5, N. Y. . . . or for more information check CP 6537 on handy form, pages 2 and 3.

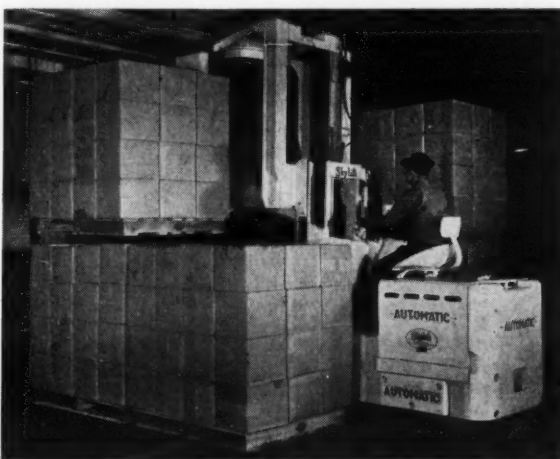
**Forks turn, truck stays parked
to stack pallet loads to right
or left of narrow aisle . . .**

forks are turned, extended, then pallet is easily placed or picked up

Uses: Attachment enables truck, parked longitudinally in an aisle, to stack to either side without having to turn at right angles to the aisle.

Features: Instead of truck making a 90° turn, forks do it while truck remains stationary. Thus, vehicle works in less space than would otherwise be required. Usual fork truck aisles are now about 12'.

Description: Sideload unit is operated by truck's hydraulic system. It is controlled by conveniently located pushbuttons, one set turning forks to right or left, the other pushing forks in or out. A system of interlocks pro-



Forks turn, stack pallet loads in 6' aisles

tection against accidentally extending the load forward before forks are turned to the side. This prevents load from exceeding inch-pound capacity of truck.

Operation of the Sideload unit consists of two motions. A rotary action turns forks either to left or right, and a scissors type of expanding motion then pushes the forks out as much as 54".

Lifting procedure follows standard method, after which forks are retracted and straightened, and truck moves on to next job. Mounted on a 5,000 lb capacity truck, unit can handle pallet loads weighing up to 2,500 lb and measuring as large as 48 x 48". This method of handling can be adapted to other trucks covering a range of capacities.

Source: Sideload attachment is a development of Automatic Transportation Co., Dept. CP, 148 West 87th St., Chicago, Ill. . . . or for more information check CP 6538 on handy form, pages 2 and 3.



**EVERYTHING'S THE SAME
BUT THE NAME**

Now It's . . .

The
RAYMOND
Corporation

● Under its former name, LYON-Raymond Corporation linked 80 years of successfully manufacturing quality products through three generations of the LYON family with 30 years of manufacturing material handling equipment under the RAYMOND family management.

● Because the name LYON had no connection with present company management and caused confusion with similarly-named manufacturers, it was decided to shorten the name. It is expected that this new name — The RAYMOND Corporation — will better identify RAYMOND family management now and in the years to come.

● The company in the past has built up a reputation for quality products and for pioneering in numerous types of Hydraulic Elevating Equipment. During the last several years, we have brought forth a notable number of "firsts"

● Today, under our new name — The RAYMOND Corporation — we will continue to help keep materials moving — in factories, in warehouses, in every field where electric trucks and hydraulic elevating equipment can be applied. And, while our name is changed, RAYMOND policies, services and quality of products will continue on the high standards already established.

A Famous RAYMOND First . . .

SPACEmaker ELECTRIC TIERING TRUCK

New rider-type truck that gives you up to ½ more storage space than conventional tiering trucks. Actually right-angle stacks loads 130" high from aisles only 6-ft. wide. Operates with ease in trucks, boxcars, low-capacity elevators; on lighter-capacity floors.

SpaceMaker Model E2ST
Straddle-type, telescopic
tiering truck. 2000-lb. cap.

Send for free Bulletin 703 today

RAYMOND

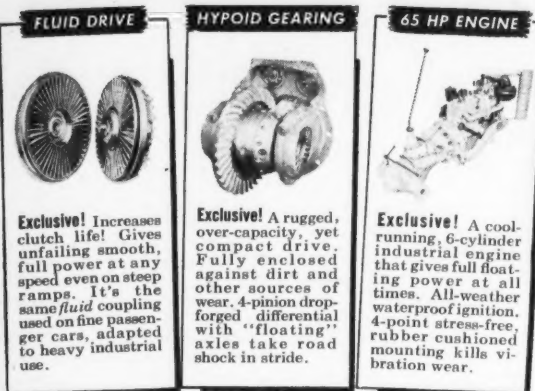
Formerly LYON-Raymond Corporation

Electric Industrial Trucks Hydraulic Elevating Equipment
The RAYMOND CORPORATION

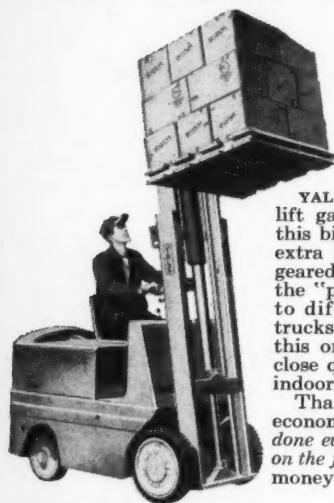
5753 SpaceMaker Street, Greene, N.Y.

When inquiring check CP 6539 on handy form, pgs. 2-3

Lick "down-time" with YALE 3-POWERED ECONOMY



Only YALE gas trucks give you these 3 money-saving features that keep trucks on the job



LICK "down-time" and you knock out the big cost factor in gas truck operation. You keep your production rolling steadily at peak levels —while your truck operating costs stay at rock bottom.

YALE, and only YALE, fork-lift gas trucks can give you this big plus—extra strength, extra power, extra precision-gear smoothness throughout the "power line" from engine to differential. While other trucks are "down for repairs" this one keeps on working in close quarters, on long hauls, indoors or out.

That's why YALE 3-powered economy means more work done every day plus more days on the job! Find out about this money-saving truck now!

Yale is a registered trademark

—MAIL THIS COUPON TODAY!—

The Yale & Towne Manufacturing Co. Dept. 129
Philadelphia, Pa.

Please send me detailed information about YALE GAS TRUCKS

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Company _____

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State _____

In Canada write The Yale & Towne Mfg. Co., St. Catharines, Ontario

YALE & TOWNE

YALE GAS AND ELECTRIC INDUSTRIAL TRUCKS • YALE WORKSAVERS
YALE HAND TRUCKS • YALE HAND AND ELECTRIC HOISTS

When inquiring check CP 6540 on handy form, pgs. 2-3

MATERIAL HANDLING

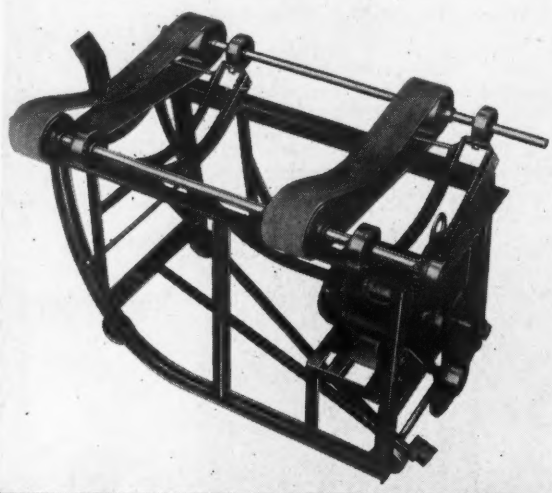
Mixes and blends material without opening drum . . .

one man can use device to rotate 16 to 24" drum at from 10 to 30 rpm

Uses: For mixing or blending materials in 16 to 24" diam fiber drums.

Features: One man can move this device to the spot where it is needed, load it, and handle mixing operation.

Description: In loading, the caster frame is retracted and Rotator tilted to a vertical position. A nose piece fits under the drum. Then, the drum and Rotator are returned to the horizontal position. Long fiber rubber belts support and grip the drum on the underside so that it can be turned



Drum rotator for fiber drums

at the rate of 10 to 30 rpm. Firm driving grip is provided by the belts' 4" wide surfaces. When operation is complete, drum is returned to the floor in the same way it was picked up. Rotator can be easily rolled to a new location on its casters.

Model "200-B" has all welded construction and can be furnished with or without motor. Chain drive is recommended for speed reduction from 1750 to 107 rpm at belt pulleys (one idler sprocket at 430 rpm), but V-belt can be used for light loads.

Source: Development of Morse Manufacturing Co., Inc., Dept. CP, 122 Dickerson St., Syracuse, N. Y. . . or for more information check CP 6541 on handy form, pages 2 and 3.

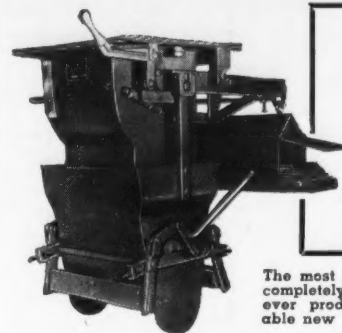
Conveying needs accommodated with standard model and alterations . . .

length, width, height and other characteristics of belt conveyor are altered to fit

Uses: Used for handling, inspection, packing, and other tasks where belt conveyors speed the work.

Features: Standard belt conveyor is so designed that height can be varied from 21 to 40". Length is changed by adding or removing 5-ft sections. Width changes can be made by adding leaves to the table top which flanks the belt, and by changing the size of the belt used.

Description: As needs change, this conveyor unit can



**BEATS
Anything
YOU HAVE
EVER SEEN**

**In The
Way Of A
Bagging Scale**

The most highly perfected, low priced completely self-contained bagging unit ever produced. This really remarkable new

APEX BAGGING SCALE

For Free Flowing Materials

combines speedy filling and accurate weighing in one simple semi-automatic operation. Handles four to six 100 lb. bags per minute. Extremely easy to operate. Quickly attached to any wood or metal hopper.

GIVES YOU MANY ADVANCED AND EXCLUSIVE FEATURES

including: one-piece over and under indicator; incomparable bag clamp; protective dust evacuating shield; 2 to 1 leverage system; extra large, trouble-free dash pot; simple slide gate control.

Write for literature. Exclusive distributors:

BURROWS

EQUIPMENT COMPANY

1316-M Sherman Ave.

Evanston, Ill.

When inquiring check CP 6542 on handy form, pgs. 2-3

Your Copy is Ready

**TO HELP YOU HANDLE
GRANULAR MATERIALS WITHOUT
CONTAMINATION**



• BULLETIN 2236 tells you how the "tight lip" construction of Blaw-Knox Buckets stops leakage of dry fines . . . it describes how the sealed anti-friction lever arm sheave bearings prolong bucket life and increase operating efficiency . . . it illustrates the many other important Blaw-Knox features that can help cut handling costs in your plant.

Write for Bulletin 2236 Today!

BLAW-KNOX DIVISION

of Blaw-Knox Company
2076 Farmers Bank Building
Pittsburgh 22, Pa.

BLAW-KNOX

**FOR CHEMICAL AND
FERTILIZER PLANTS**

CLAMSHELL BUCKETS

When inquiring check CP 6543 on handy form, pgs. 2-3

MATERIAL HANDLING

be extended from a minimum length of 10 ft to a maximum of 60 ft. Belts of 10, 12, 16, 18, or 20" widths are handled. These belts are four-ply solid woven cotton ordinarily, although other types are available. Speed from 5 to 100 ft per min, either fixed or variable can be attained. Belt travel is also completely reversible if desired. While the conveyor can be lagged or studded to the floor, it can also be furnished on casters if this is desirable. Power is 1/3 hp motor, single or poly-phase.

Source: Rapistan Table-Veyor is a product of Dept. TV, The Rapids-Standard Co., Inc., Dept. CP, 342 Rapistan Bldg., Grand Rapids 2, Mich. ... or for more information check CP 6544 on handy form, pages 2 & 3.

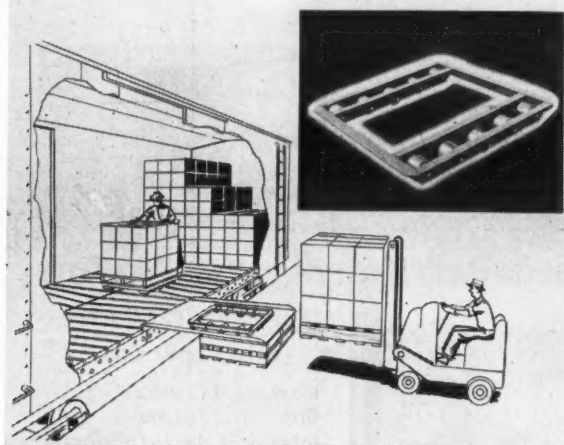
Makes it easier to load, unload reefer cars with pallets ...

loaded roller platform can be pushed and turned by hand

Uses: Roller platform is placed under pallet loads to be loaded into reefer cars. Can also be used, of course, for unloading.

Features: Multiple rollers allow this platform to be pushed and turned, while loaded, even over rough surfaces.

Description: Ace Pallet Roller consists of a high tensile strength, alloy steel frame 42" long by 36" wide. It is equipped with 10 large-diameter rolls with ball bearings. The axles of the rolls are hexagonal and are

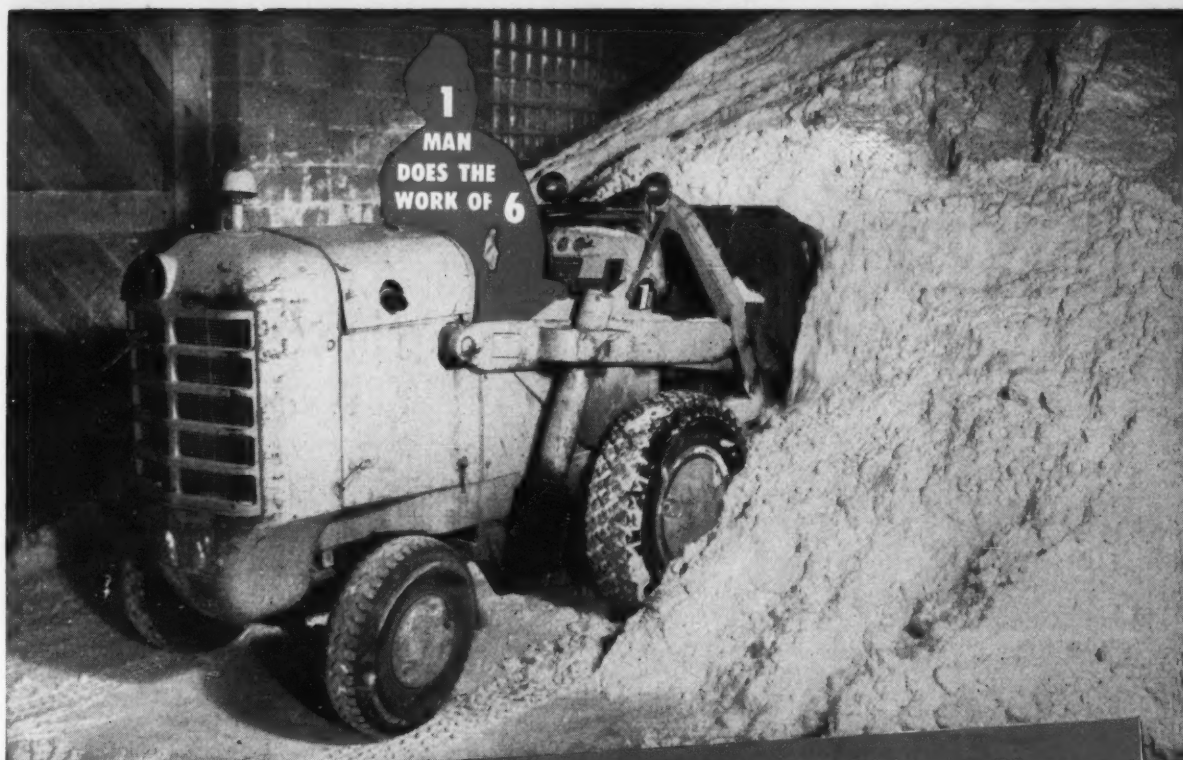


Cutaway drawing shows platform (inset) in use

keyed in place by cotter pins. Thus they are easily removable for servicing or replacement. Center rollers project farther below the frame than the others. By balancing the load on these two center rollers, it is possible to turn load through 360 degrees.

In use, a fork truck lifts the pallet and roller platform to a bridge ramp leading to the reefer car. Handlers then push the load into the car, turn it to right or left and place the load where needed. Empty platform, weighing 76 lb, can easily be pushed or carried back to the ramp by the men. Loads up to 4000 lb can be handled by this roller.

Source: Frank L. Robinson Co., Dept. CP, Latham Sq. Bldg., Oakland 12, Calif., is the maker ... or for more information check CP 6545 on handy form, pages 2 and 3.



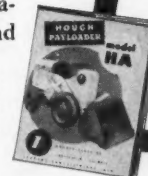
PAYLOADERS can Help You Too

THE chemical and fertilizer industries are constantly adding to their fleets of Hough PAYLOADERS because these unit-built tractor-shovels are a sure, proven way to lick rising costs, solve manpower shortages and increase output.

A PAYLOADER more than pays its way every day — actually pays for itself within a few months doing the many jobs listed here and doing them faster and cheaper ... releasing manpower for more productive work.

The 12 cubic foot Model HA shown is the smallest of the PAYLOADER line that includes graduated sizes up to 1½ cubic yard bucket capacity. Every PAYLOADER is a complete, Hough-built tractor-shovel specifically designed with multiple reverse speeds and other features that insure fast, low-cost bulk material handling. They are backed by 30 years of material-handling equipment manufacture and are sold and serviced by a world-wide Distributor organization. The Frank G. Hough Co., 744 Sunnyside Ave., Libertyville, Ill.

Literature on any size PAYLOADER will gladly be sent without obligation.



On These Jobs

- Unload box cars
- Dig and carry fertilizers, chemicals, all loose materials
- Feed conveyors, hoppers, baggers, elevators
- Unload trucks
- Load box cars
- Carry bagged materials
- Clean up aisles, gangways
- Maintain private roadways
- Handle coal, coke, ashes
- Stockpile coal and materials
- Remove snow
- Lift-pull-push



PAYLOADER®

THE FRANK G. HOUGH CO. • Since 1920



When inquiring check CP 6546 on handy form, pgs. 2-3

Materials HANDLING EQUIPMENT

CUSTOM BUILT TO MEET YOUR NEEDS

BARREL and BOX SKID

All-Steel

Item B-470

All steel—welded construction—light weight. Will stand up under the heaviest barrel or box. Skid measures 14" wide overall.

Combination

TRUCK and DRAIN RACK

Lloads Automatically

A dual purpose truck that can be used to move barrels or drums and also serve as a drain rack. Available in two styles—with or without detachable handles. Sturdy frame-welded construction. Weight approximately 90 lbs.

Item NS-506 (Handles welded to frame) \$4675

Item NS-506 DH (truck complete with detachable handles) \$4895

Vertical DRUM LIFTER

For handling open and closed steel drums in vertical position, by crane or hoist. All-steel, with heavily welded chain. Sure-hold safety barrel grip. Saves plant space. Use for either high or low ceiling condition.

Item C-465

\$3025

FOR DETROIT

DRUM and BARREL TILT

Item B-731 \$18150

A barrel tilt for controlled, precision dumping or pouring. Ideal for chemicals, solvents, powders, etc. Turns 360° through worm drive. Equipped with two safety type locking devices and all-steel, welded yoke. Hand-operated chain drive.

BARREL TRUCK

It Loads Automatically. Three style wheels: metal, rubber or metal and pneumatic. Capacity 1000 lbs. 22" wide for narrow openings. Weight 85 lbs.

When Ordering give item number. Prices subject to change without notice.

Item S-911P Pneumatic Rubber Wheels \$4950

Item S-911M Metal Wheels \$3685

Item S-911R Molded on Rubber Wheels \$4235

DESIGNED AND MANUFACTURED BY

Palmer Shile Co.
16016 FULLERTON AVENUE • DETROIT 27, MICH.

MATERIAL HANDLING

Illustrates line of portable roller and wheel conveyors

Eight-page bulletin specifies portable conveyors, either roller or wheel type, available in standard 5' and 10' sections. Three standard widths are 12", 15" and 18" overall. 28 large illustrations depict curved sections, 3-way switch allowing for travel of packages in as many directions, adjustable tubular stands and straight and curved mobile units. Explains erection problems and determination of conveyor requirements. Bulletin 15 is issued by The E. W. Buschman Co., Dept. CP, Clifton and Spring Grove Aves., Cincinnati 32, Ohio. When inquiring specify CP 6548 on handy form, pages 2 & 3.

Engineered for safety, one-piece bridge ramp carries 7-1/2 tons . . .

combines guard rails, rough surface, other safety features with truss and brace construction

Uses: Used to span the gap between trucks and loading dock, or other similar gaps where industrial trucks must travel.

Features: Rough traction surface, side guard rails, beveled edges and rounded corners make the ramp as safe as possible.

Description: Roll-Rite Bridge Ramp is designed as a safe replacement for flat steel plates used to bridge gaps for passage of industrial trucks. A single stirrup in the center of the ramp surface is used for lifting with



15,000 LB. CAPACITY

fork truck. Ramp locks in position with a special device which prevents it from creeping. The underside is braced so that the ramp can safely handle as much as 15,000 lb loads.

Source: Roll-Rite Corporation, Dept. CP, 801 Jefferson St., Oakland 7, Calif., is the maker . . . or for more information check CP 6549 on handy form, pages 2 and 3.

Battery technology given in handbook

Pocket-size, 56-page, illustrated handbook covers battery theory, repair, and engineering data for motive-power types. In this third edition of the book a section has been added which deals with battery charging. Included in this section is information about modified constant voltage charging, two-rate charging, boost, equalizing and emergency charging. Four methods of control of discharge are described. Other sections of

Penicillin Mold

Elevated by HAMMOND Screw-Lift

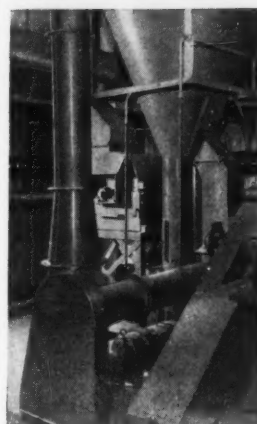
Abbott LABORATORIES

Abbott Laboratories, Manufacturing Pharmaceutical Chemists at North Chicago, Ill., use a Hammond Screw-Lift in their processing of Penicillin Mold. Twin Screw Mixers discharge into Screw-Lift feeder, then Mold is elevated 21'-6" to distributing conveyors handling 500 cu. ft. per hour (30 lb per cu. ft.).

Arrangement is compact, very little space is required and utmost cleanliness is achieved. Any discharge condition can be met with Screw-Lift and it works in unison with any processing procedure.

Hammond Screw-Lifts elevate any free-flowing bulk material from receiving point to storage or to processing departments to packaging.

Write for form No. M-500-2.



Receiving end of Screw-Lift showing discharge from mixer to Screw-Lift Feeder.

Screw Conveyor Corporation
699 HOFFMAN ST. HAMMOND, IND.
ENGINEERS TRADE MARK REG. PRODUCTS U.S. PAT. OFFICE

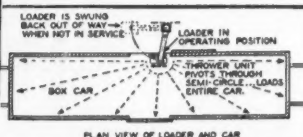
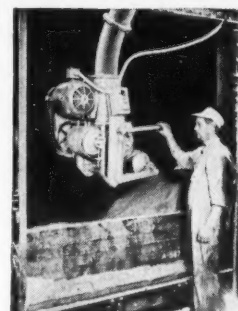
When inquiring check CP 6550 on handy form, pgs. 2-3

S-A SWIVELOADER

Loads Bulk Materials Into Box Cars

(1) Faster (2) Easier
(3) At Low Cost

Powerful centrifugal thrower unit handles dry materials up to 2" size. One man operates loader without entering car. Eliminates hand trimming!



Write for

BULLETIN No. 1046

11 Ridgeway Ave.
Aurora, Ill.

Los Angeles, Calif.
Belleville, Ont.

STEPHENS-ADAMSON MFG. CO.
Tellevul-Bin Level Controls Car Loaders Saco Speed Reducers SealMaster Ball Bearings Car Pullers Winches

When inquiring check CP 6551 on handy form, pgs. 2-3

CHEMICAL PROCESSING

When inquiring check CP 6547 on handy form, pgs. 2-3

MATERIAL HANDLING

the book consider theory, care and operation, maintenance and repairs, parts, and technical data.

Specific directions, illustrations and drawings show how to disassemble, replace parts and reassemble the repaired battery. Information about acid and mixing electrolyte is included together with a table giving the ratio of water to acid recommended for various batteries. "Battery Handbook" is issued by Gould-National Batteries, Inc., Dept. CP, Trenton 7, N. J. When inquiring specify CP 6552 on handy form, pages 2 & 3.

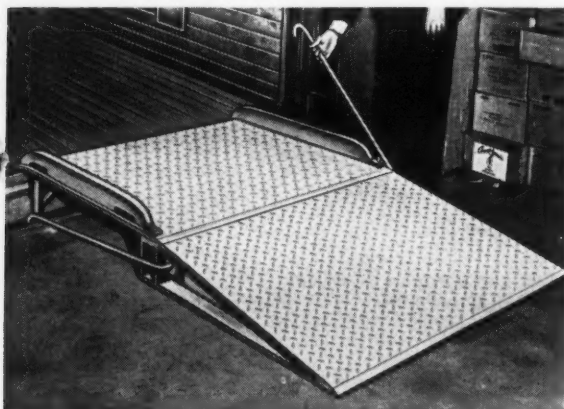
Safety feature prevents slip during loading or unloading with bridge ramp . . .

hook action of drop lock holds ramp in place even when heavy loads travel over it

Uses: Used to bridge gap between truck and loading dock where a difference in height is involved.

Features: Drop lock, shown in illustration, hooks over edge of dock to prevent entire bridge ramp from slipping or working away from truck.

Description: Ramp and bridge sections are made of light weight magnesium alloy and designed for minimum handling effort. Drop lock feature is attached



Drop lock hooks edge of dock to stop slipping under heavy loads

to the ramp so that lock pivots freely and can be used in the manner shown. Action of the lock is positive, preventing any slippage of this equipment.

Source: Product of Magline, Inc., Dept., CP, Pinconning, Mich. . . . or for more information check CP 6553 on handy form, pages 2 and 3.

Drawings show maneuverability of industrial fork trucks

Component parts of fork trucks are detailed and illustrated in eight-page bulletin. Deals with 3000, 4000 and 6000 lb capacity trucks. Bulletin contains dimension drawings which show the maneuverability of each of the trucks, complete specifications and action pictures of the trucks.

Special attachments which can be used for handling materials of sizes, shapes and forms not practical with standard forks are outlined and depicted. Bulletin 1326-a is issued by Baker Industrial Truck Division, The Baker-Raulang Company, Dept. CP, 1250 W. 80th St., Cleveland 2, Ohio. When inquiring specify CP 6554 on handy form, pages 2 and 3.

SEPTEMBER, 1951



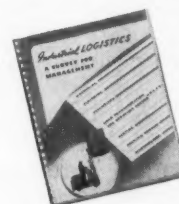
6 SPECIFIC BENEFITS gained from these **ELWELL-PARKER Trucks**

Here are highlights from the success story of an E-P fleet at a prominent midwestern tannery:—

- 1** Elwell-Parkers have "enabled us to install a completely different and *advanced* method of handling hides . . ."
- 2** "Leather sure gets around in a hurry"—Elwell-Parkers help synchronize the flow of 3 million pounds of stock from one operation to the next in the processing cycle.
- 3** Heavy-duty Elwell-Parkers give dependable service—are "the greatest work horses of our tannery".
- 4** In storing pallets of hides, Elwell-Parkers can "plunk them right up to the ceiling".
- 5** Back injuries and sprains decreased sharply now that hides are no longer "manhandled" on wheelbarrows.
- 6** Trucks prove versatile in many maintenance operations, such as moving heavy machinery.

What make truck could work in the water and grease year in and year out like these Elwell-Parkers?

In every branch of the chemical industry, *bigger* unit loads are being moved *faster* and for *less* by Elwell-Parkers . . . *You, too, can benefit*—the first step is to have an experienced **MAN** analyze your material handling requirements. No obligation. Write The Elwell-Parker Electric Company, 4016 St. Clair Avenue, Cleveland 3, Ohio.



"INDUSTRIAL LOGISTICS"

Send for this complete handbook on the science of materials handling. Please name your product.

ELWELL-PARKER
POWER INDUSTRIAL TRUCKS

Established 1893

When inquiring check CP 6555 on handy form, pgs. 2-3

Hackney
MILWAUKEE

STAINLESS STEEL DRUMS

"Made of stainless steel!
That means long life and
utmost resistance to corrosion—
very attractive appearance."

"Look inside—no
chime crevice! There's
no place for foreign
matter to lodge."

"Absolutely liquid-tight—
no chance for
leakage in or out."

"They're exceptionally
lightweight—
easy to handle.
Yet they're
strong, too!"

"Head is completely
removable. Emptying and
cleaning are easy. Your
choice of two types of
closures—the famous
quick-acting Toggle-tite
or bolt type."

"And look at the
specially formed Hackney
welded chime construction.
That's what insures a
smooth bottom . . . so easy
to clean and keep clean."

Another Important Hackney Product

HACKNEY REMOVABLE HEAD
SEAMLESS ALUMINUM
BILGED BARRELS

These Hackney aluminum barrels are ideal
containers for many types of products—foods, chemi-
cals, etc. They are lightweight, sturdy and eco-
nomical. Also available in mild steel.



PRESSED STEEL TANK COMPANY

Manufacturer of Hackney Products

1463 S. 66th St., Milwaukee 14 • 1387 Vanderbilt Concourse Bldg., New York 17 •
235 Hanna Bldg., Cleveland 15 • 936 W. Peachtree St., N.W., Room 126, Atlanta 3 •
208 S. LaSalle St., Room 796, Chicago 4 • 568 Roosevelt Bldg., Los Angeles 14.

CONTAINERS FOR GASES, LIQUIDS AND SOLIDS

When inquiring check CP 6556 on handy form, pgs. 2-3

MATERIAL HANDLING

User's specifications met for platform trucks . . .

wheels, casters, shelves can be varied as required
Uses: Light duty platform trucks with smooth steel
shelves.

Features: Trucks can be built to meet individual re-
quirements. They are furnished with any size or type



Light duty platform trucks meet individual specs

of caster and wheel; lips of shelves can be supplied
turned up or turned down.

Description: Specifications of the 2 typical models
illustrated are as follows:

Dimension	Large Truck	Small Truck
Width	24"	24"
Length	54"	40"
Wheels	5"	6"

Source: Market Forge Company, Materials Handling
Div., Dept. CP, Everett, Mass. . . or for more infor-
mation check CP 6557 on handy form, pages 2 and 3.

Shows importance of trucks in national security

Two-color, eight-page booklet gives factual and dramatic
highlight summary of the importance of trucking industry
to nation's economy. Manual includes quotations from
military and government officials as to the necessity of
trucking, cites results of special surveys into civilian de-
fense economy needs, and gives examples of growth of the
trucking industry. "National Security Rides on Trucks" is
issued by the Trucking Information Service, Mack Trucks,
Inc., Dept. CP, 350 Fifth Ave., New York 1, N. Y.
inquiring specify CP 6558 on handy form, pages 2 and 3.

Tractor automatically engages industrial trailers with clamp and teeth device . . .

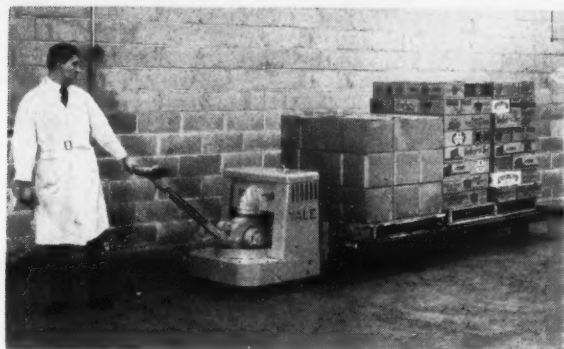
operator merely guides tractor to trailer and presses
button to assemble unit

Uses: Tractor will operate with almost any type
trailer which has some projection of edge to permit the
gripping mechanism to engage.

Features: Permits operation in very narrow aisles
and where accurate spotting of loaded trailers is neces-
sary. Possible to engage the end of a caster type trailer
and make a right angle turn with the center of the turn
being the fixed axle of the trailer. This gives the
shortest steering radius possible with a given trailer.

Description: In operation, the motorized tractor is
driven to the end of the trailer and a button is pressed

CHEMICAL PROCESSING



Trailer becomes integral part of tractor

engaging a hook on the tractor with the lower side of the trailer frame. The hook then pulls the trailer into contact with the tractor. Next, a pair of secondary hooks reach out and grab the top part of the trailer frame engaging tractor and trailer. Finally, the trailing wheels of the tractor lift off the floor so that the weight of the rear end of the tractor is supported on the trailer and both form an integral unit.

Source: "Grip-Tow" tractor is manufactured by Philadelphia Division, Yale & Towne Manufacturing Company, Dept. CP, 11,000 Roosevelt Blvd., Philadelphia 15, Pa. . . . or for more information check CP 6559 on handy form, pages 2 and 3.

**Positioning of power unit
a maneuverability factor
of all-purpose truck . . .**

operator sits in pan type seat on truck; 3 hp motor unit mounts on single wheel; body capacity 1 ton

Uses: For handling loads up to 1 ton.

Features: Level of floor is only 18" above ground. Hinged sides of body facilitating loading and unloading, are 12" high.

Description: General purpose motor truck is powered by a 3 hp motor which has a 3-speed and reverse gearbox. Gear ratios are available to suit different conditions and loads. Road speed ranges up to 10½ mph.

Body is steel and floor is wood. Pan type tractor seat is



provided for driver. Heavy steel plate bumper gives forward protection to power unit. Overall length: 8' 6", width 3' 4".

Source: General purpose truck Model 332 is built by Hambro Machinery Division, Dept. CP, 350 Fifth Ave., New York, N. Y. . . . or for more information check CP 6560 on handy form, pages 2 and 3.



*Regardless of your
Material Handling Problem—
WE'LL BET ONE OF THESE
TOWMOTOR ACCESSORIES
can help solve it!**

** If not—TOWMOTOR SPECIAL ENGINEERING will develop the answer!*

HANDLES
ANY TYPE
MATERIAL

TOWMOTOR
THE ONE-MAN-GANG

FORK LIFT TRUCKS and TRACTORS

RECEIVING • PROCESSING • STORAGE • DISTRIBUTION

TOWMOTOR CORPORATION, DIV. 23
1226 E. 152nd St., Cleveland 10, Ohio

Send free folders describing the 14 Standard
Towmotor Accessories, and Towmotor's Special
Engineering devices.

Name _____

Address _____

City _____ State _____

Type of materials handled _____

HOW MANY PEOPLE HAVE YOU TALKED TO ABOUT AMERICANISM TODAY?

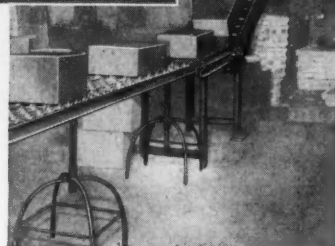
When inquiring check CP 6561 on handy form, pgs. 2-3

A Profitable Solution

for Processing Plant Handling



Buschman
"ROLL-OR-WHEEL"
Conveyors



Processing plants requiring many production line changes from product to product have found that BUSCHMAN Portable Roller or Wheel type Conveyors, attached to powered floor-to-floor Beltevators, reduce the cost of excessive handling—yield large returns on a very small investment.

The BUSCHMAN "Roll-or-Wheel" Conveyor is available in 10 ft. and 5 ft. straight sections, curves, stands, 3-way switches and other accessories. These units can be moved and reset in a matter of minutes.

Write for bulletin No. 15 today.

THE E. W. BUSCHMAN CO., INC.
Spring Grove at Clifton, Cincinnati 32, Ohio

PRODUCE MORE...FOR LESS
on
Buschman
Conveyors

When inquiring check CP 6562 on handy form, pgs. 2-3

MATERIAL HANDLING

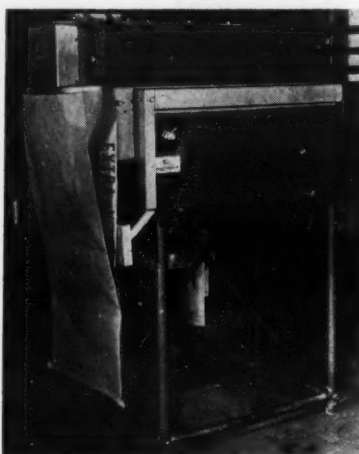
Fills 200 pound bag to plus or minus 1/10 pound...

unit has long life — to maintain accuracy for ten years

Uses: Used for filling bags and drums to a predetermined weight.

Features: Weighing system is rugged and does not employ knife edge pivots, or bearings. The accuracy of plus or minus one tenth pound is guaranteed for a period of ten years.

Description: Portable model 300G Thayer Filling Scale can be used with bags or drums. Unit will handle ten bags per minute at 100 pounds per bag or will handle up to 200 pounds



Bagger handles ten 100-pound bags per minute

per bag. Feeder is of stainless steel with self-cleaning gate for material with a tendency to cake. Bags are hung on automatic bag clamp and may be released either automatically or by a switch when filled. Three lights at eye level indicate stages of the filling process. Bottom amber light shows that bag is being filled. Completion of filling is indicated by white light. If bag should go overweight, top red light lights.

Source: Product of Thayer Scale and Engineering Corp., Dept. CP, 494 E. Water St., Rockland, Mass. . . . or for more information check CP 6563 on handy form, pages 2 and 3.

Engineering data on conveyor idlers

Conveyor belt idlers and related equipment are described in 41-page bulletin. Illustrations, drawings and specification tables are given for idler types handling belt widths ranging from 14" to 60". Widest belts traveling at 100 fpm can carry up to



Molded On Rubber Tired Wheels



Pneumatic & Semi-Pneumatic Casters



Semi-Steel Wheels



Pneumatic and Cushion Wheels

THOMAS
MAKES 1000 DIFFERENT KINDS OF CASTERS & WHEELS
Write for complete catalog and price list



Swivel Casters



Stem Plate Casters



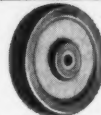
Cone Stem Swivel Casters



Extra Heavy Duty Wheels



"Resonite" Wheels



Solid Rubber Wheels

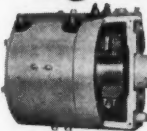
THOMAS TRUCK & CASTER CO.

192 MISSISSIPPI RIVER
KEOKUK, IOWA

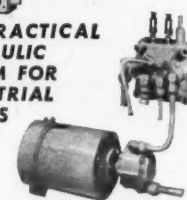
When inquiring check CP 6564 on handy form, pgs. 2-3

BAKER
do more

FORK TRUCKS
work per dollar invested



THE PRACTICAL HYDRAULIC SYSTEM FOR INDUSTRIAL TRUCKS



THE SAFEST CONTROLLER FOR INDUSTRIAL TRUCKS

Yours for the Asking!



16-page picture-story manual "CARE and MAINTENANCE of INDUSTRIAL TRUCKS." Write for your copy today.

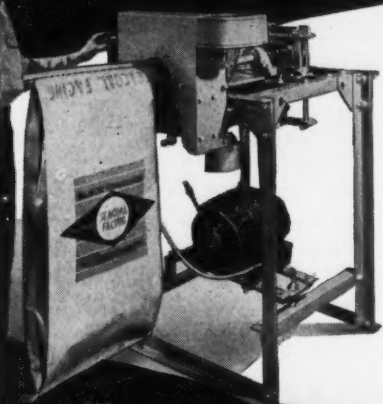
BAKER INDUSTRIAL TRUCK DIVISION of The Baker-Raulang Company
1208 West 80th Street, Cleveland 2, Ohio

Baker INDUSTRIAL TRUCKS

When inquiring check CP 6565 on handy form, pgs. 2-3

CHEMICAL PROCESSING

BLACK DIAMOND AUTOMATIC CONTROLLED WEIGHT valve bag packer



FOR
FURTHER
INFORMATION
WRITE **BLACK PRODUCTS COMPANY**
TO 13513 S. CALUMET AVE. • CHICAGO 27, ILL.
MANUFACTURERS SINCE 1912

Accurate • Fast
Simple to operate
Push-button control
Material agitating
feed hopper
Position of bag on
filling tube does
not affect final
bagged weight
Moderately priced
★
**PERFORMANCE
GUARANTEED**
★

When inquiring check CP 6566 on handy form, pgs. 2-3



*Here
they are!*

**LEAK PROOF
LIGHTWEIGHT AND
CHEMICALLY INERT
UNBREAKABLE**

Agilene (POLYETHYLENE)
CONTAINERS FOR STORAGE AND TRANS-
PORTATION OF CORROSIVE CHEMICALS

AGILENE containers are the
answer to your problem of
handling, storing, and trans-
porting of corrosive materials.
Their light weight, resistance to
impact and chemical inertness
make them ideal for chemical
industries.

Write today for full information.

MADE IN SIZES
FROM ONE QUART
TO FIVE GALLON
CAPACITY
•
WRITE FOR
QUANTITY PRICES
TODAY!

AMERICAN AGILE CORPORATION
PLASTIC DIVISION
5806 HOUGH AVE. • CLEVELAND 3, OHIO

When inquiring check CP 6567 on handy form, pgs. 2-3

MATERIAL HANDLING

1080 tons per hour. Designs are ap-
plicable to conveying heavy or light,
abrasive or non-abrasive, corrosive or
non-corrosive materials.

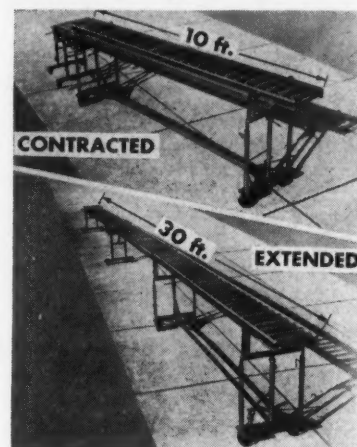
There are two pages of general engi-
neering information to help in design-
ing and specifying belt idler equip-
ment. A graph compares cushioning
performance of idlers with consequent
effect on conveyor belt life. Other
material discusses zipper bunker seals
along with data on belt conveyor
trippers. Bulletin #51-81 can be
obtained from Dept. PR, Chain Belt
Co., Dept. CP, 1600 West Bruce St.,
Milwaukee 4, Wis. When inquiring
specify CP 6568 on handy form,
pages 2 and 3.

**Mobile itself, conveyor
extends from 10'
to 30' . . .**

roller conveyor can be moved,
adjusted for proper location

Uses: Primarily used for bundles
and other non-rigid, flat bottom ob-
jects.

Features: Combination of mo-
bility and telescoping action makes it



Shows how conveyor can be extended

possible to bring the end of the
conveyor right to the spot where
needed.

Description: Supplied in twelve
and eighteen inch widths, Wilkie Rol-
ler Conveyor permits quick change-
overs in storerooms or shipping de-
partments. Nine models of varying
length up to 30' max are available.
When extended, the under sections
pull up flush to give a level roller
surface. Construction is all steel.

Source: Manufactured by The
Wilkie Company, Dept. CP, 5520
Arch St., Philadelphia 39, Pa. . . or
for more information check CP 6569
on handy form, pages 2 and 3.



PATENTED



**Skates go to the rink
(and from the store) in this H & D
corrugated "luggage" box**

It doesn't take an ice skater long to see that this is more than "just a
box"—it's also a handy carrier for his skates. The result? Easier
sales for clerks who sell Spalding skates packed in this bright, linen-
finish corrugated box. Styled like a smart piece of airplane luggage,
this H & D box helps provide the "plus" that turns shoppers into buyers.

The H & D Package Laboratory is ready to add a sales "plus"
to *your* product, too, by creating a package with after-sales-use—or by
providing better display . . . cutting wrapping costs . . . giving extra
protection . . . increasing multiple or tie-in sales. For free
booklet, "Pack to Attract," write Hinde & Dauch,
5105 Decatur St., Sandusky, Ohio.

H&D



HINDE & DAUCH
Authority on Packaging

FACTORIES IN: Baltimore • Buffalo • Chicago • Cleveland • Detroit • Gloucester,
N. J. • Hoboken, N. J. • Kansas City, Kansas • Lenoir, N. C. • Richmond,
Va. • Sandusky, Ohio • St. Louis • Watertown, Mass. Offices in principal cities.

When inquiring check CP 6570 on handy form, pgs. 2-3



Proven power and endurance for cleaning SMALL TUBES

Elliott Company - Roto Division
Newark 1, N. J.

Gentlemen:

On receipt of your miniature tube cleaning equipment, I was a bit dubious of its qualifications to carry out the job it had to do. It has cleaned 4,000 3/4" x 24" copper-nickel tubes, and has done this job well. All suspicions of its staying qualities have been removed.

I can heartily recommend this equipment. Thanking you.

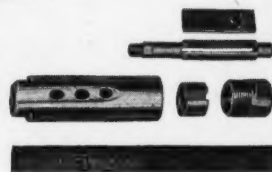
Yours respectfully,

(Signed) Chief Engineer

NOTE - This is unsolicited



SECTION OF
ROTO MOTOR



The secret of the power and endurance of the Rotojet Junior Tube Cleaner is its extreme simplicity of design and precision construction. It has only two moving parts, a shaft and a paddle. Positive contact between the paddle and the Rotojet bore cylinder assures an undivided air stream and freedom from leakage. Its convenient size, speed, and ease of operation, offer a marked contrast with external cleaners costing many times more.

Send for bulletin.

ROTOJET® Junior TUBE CLEANERS



ELLIOTT COMPANY-ROTO DIVISION

141 Sussex Avenue

Newark 1, N. J.

When inquiring check CP 6571 on handy form, pgs. 2-3

MATERIAL HANDLING

**Makes right angle pick-up
in aisles narrower
than its length . . .**

operator stands on rear platform of maneuverable, electric, low-lift truck

Uses: For handling both single and double faced pallets.

Features: Rider type truck is short and maneuverable . . . makes right angle turn to pick-up or spot load in aisles narrower than its length carrying load.

Description: SpaceMaker low-lift electric truck travels up to 5 mph carrying 4000 lb load or up to 6 mph when empty. Carrying frame is 30 to 60" in length and has widths of 24, 27, or 30". Overall length of power unit



Truck handles both single and double faced pallets

and rider platform combined is 28". Forks are 9-1/2" wide and may be raised from 3 1/4" (lowered position) to 7-1/4". Truck is powered by either 250-440 amp-hr 6 cell lead storage battery or a 300 amp-hr 10 cell Edison battery.

Source: Development of The Raymond Corporation, Dept. CP, 63-83 Madison St., Greene, N. Y. . . or for more information specify CP 6572 on handy form, pages 2 and 3.

**Combination of fork truck
and roller conveyor
saves time . . .**

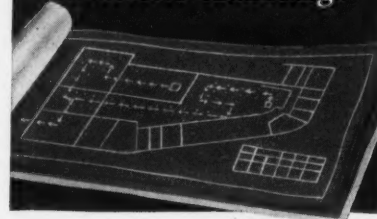
palletized loads are set down on roller conveyors and pushed into elevator at will

Uses: This combination of equipment was installed in a large warehouse handling many palletized loads.

Features: Lift truck does not have to wait for elevator; is free for reloading.

Description: Two pairs of roller conveyors placed on floor in front of elevator match similar rollers inside the elevator cab. When palletized loads are received they are delivered to these conveyors. Truck is free to return for more loads, since when the elevator is ready, the pallets can be pushed in without the truck. The roller conveyors are portable so that crates or other

Take an EXTRA Profit
with **Weld-Bilt**
Experience in
Materials Handling!



Weld-Bilt
PRODUCTS

One Midwest manufacturer saved \$90,000 on equipment cost alone because he called in a Weld-Bilt engineer first, before deciding on expensive special-design units recommended to solve a

difficult handling problem. Our engineer, experienced in cost-saving shortcuts, showed how simple adaptation of more standard equipment could do the job even better.

This is the kind of service you can expect from WELD-BILT . . . a thorough analysis of your problems based on years of varied experience and wide knowledge of handling problems . . . then a recommended solution that will do YOU the most good—in time and labor savings, in product protection, production speed-up—at the lowest cost. It may involve adapting standard equipment, custom-engineering new equipment—or merely realigning your present operations.

Call in the WELD-BILT Materials Handling Engineer for an economical solution to your problem today. You'll probably save money.

WEST BEND EQUIPMENT CORP.

319 Water St., West Bend, Wis.

MATERIALS HANDLING ENGINEERS

Portable Elevators • Pallet Trucks • Single
Stroke Lift Trucks • Two-Wheel Trucks •
Platform Trucks • Skid Platforms.

When inquiring check CP 6573 on handy form, pgs. 2-3



**Put this idler
to work for you**

It's a Robins Troughing Idler—with features no other belt conveyor idler can offer.

Robins Ball Bearing Troughing Idlers fit belt conveyors up to 36" wide. Robins Roller Bearing Troughing Idlers have exclusive Triple Grease Seal which locks grease in, keeps dirt and moisture out. Sizes to fit belt conveyors up to 60". Both types provide exclusive One-Shot Lubrication.

Immediate shipment from stock. Most sizes of Robins Idlers now carried in stock for immediate shipment. For Troughing, Return, or Flat Belt Idlers write for Bulletin 120-A.

ROBINS IDLERS

ROBINS CONVEYORS DIVISION

Hewitt-Robins Incorporated
Passaic, New Jersey

When inquiring check CP 6574 on handy form, pgs. 2-3

MATERIAL HANDLING



Pallet loads being set down on portable roller conveyor

non-pallet loads can be handled by conventional methods. By encouraging suppliers to ship on pallets, handling costs have been cut 10 to 15% by this system.

Source: The portable roller conveyors were developed by Lamson Corporation, Dept. CP, 429 Lamson Street, Syracuse 1, N. Y. Fork trucks were manufactured by Baker Industrial Truck Div., The Baker-Raulang Company, Dept. CP, 1250 W. 80th St., Cleveland 2, Ohio . . . or for more information check CP 6575 on handy form, pages 2 and 3.

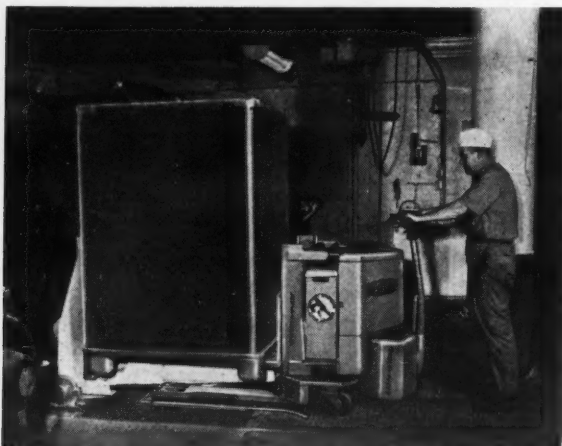
Design adapts pallet truck for sealed containers . . .

available in telescopic and non-telescopic models

Uses: Pallet truck especially made for handling sealed containers of bulk materials.

Features: Available telescopic and non-telescopic.

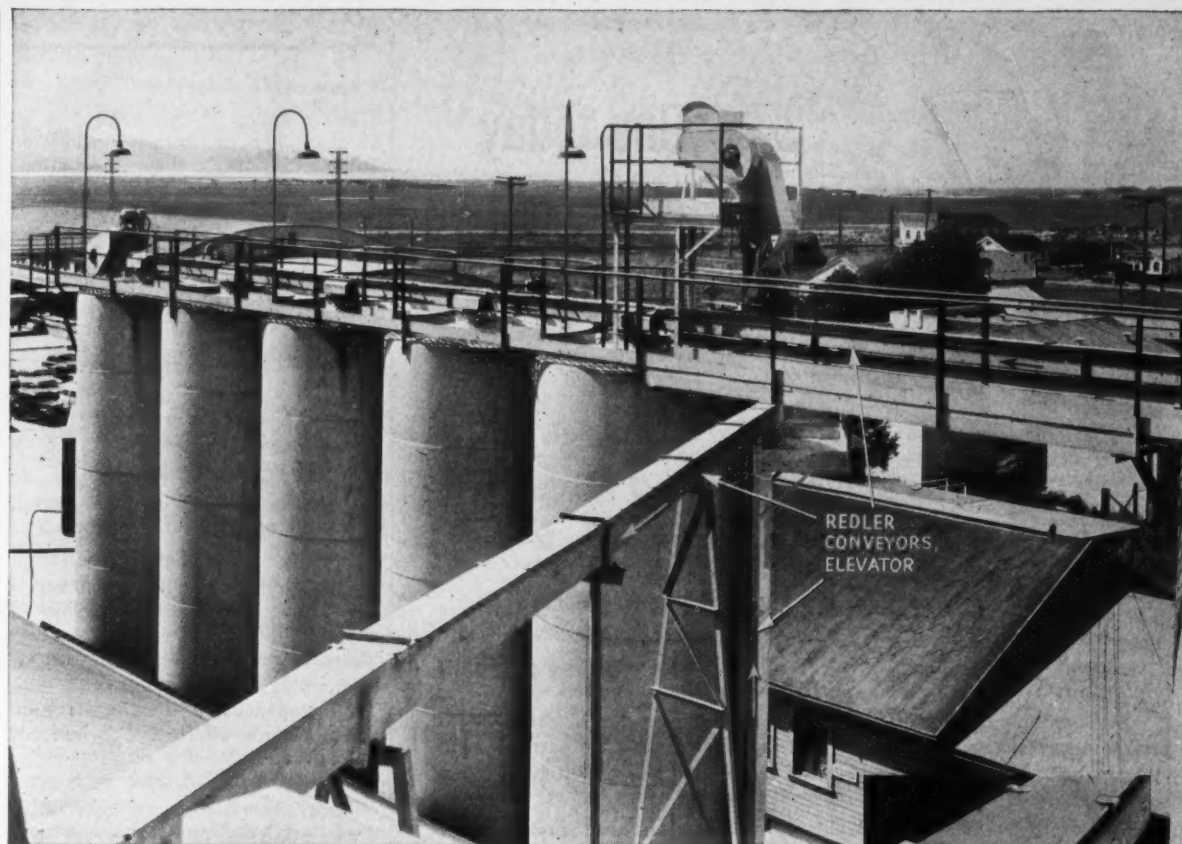
Description: Truck has capacity of 4000-lb loads up to 48" long. Non-telescopic model has fork elevation of 53"; telescopic model has fork elevation of 77". Front wheels, rear wheels, and stabilizing casters are rubber-



Especially suitable for handling sealed containers

tired. Truck has 2 speeds forward and reverse, electric lift and lowering, and spring-set, electrically released brake. All controls for these functions are in handle head and can be operated in any position.

Source: "Jackstacker" trucks are made by Lewis-Shepard Products, Inc., Dept. CP, 194 Walnut St., Watertown, Mass. . . . or for more information check CP 6576 on handy form, pages 2 and 3.



NO WEATHER DAMAGE! NO SPILLAGE! NO CONTAMINATION!

REDLER Conveyors and Elevators Move, Place and Reclaim Bulk Chemicals Stored in Outdoor Tanks

Insecticide chemicals handled to and from outdoor storage tanks must be fully protected against the elements, foreign materials and loss of volume. S-A engineers provided an installation of REDLER Conveyor-Elevators to assure volume handling with cleanliness, efficiency and economy.

For the past 50 years S-A engineers have dealt successfully with all types of bulk materials handling problems. They have a complete line of bulk handling equipment from which to recommend the exact type of equipment best suited for your needs. Write for a free survey by an S-A engineer.

CALIFORNIA SPRAY-
CHEMICAL CORPORATION
Richmond, California

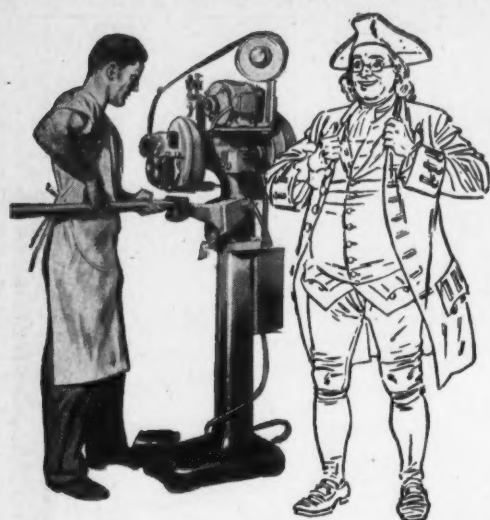
At this plant fine-mesh bulk chemicals are deposited in and withdrawn from eight outdoor steel storage tanks. Three REDLER Elevators lift material through enclosed casing to top of tanks and distribute it through a long, horizontal REDLER Conveyor. Other horizontal REDLER Conveyors reclaim chemicals below the tanks for delivery to processing operations. Through a gate-regulated, two-way chute, from the one elevator shown, chemicals may either be returned to the tanks or moved to the plant through the horizontal REDLER Conveyor shown in the foreground.

50 years experience **STEPHEN S-ADAMSON** with bulk handling
1901-1951
MFG. CO.

11 Ridgeway Avenue, Aurora, Illinois MFG. CO. Los Angeles, Calif. • Belleville, Ontario

DESIGNERS AND MANUFACTURERS OF ALL TYPES OF BULK MATERIALS HANDLING EQUIPMENT

When inquiring check CP 6577 on handy form, pgs. 2-3



**"One today
is worth two
tomorrows."**

—Ben Franklin's Almanac, 1757

Experts may disagree on the course of ye economy tomorrow; yet none disputes the healthful effect of thrift and efficiency on ye net profit after taxes today.

—Acme Steel Notebook, 1951

In spite of current shortages of some steel products, you have the opportunity to achieve greater thrift and efficiency—today.

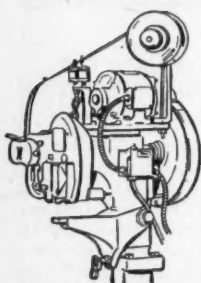
For example: you still can get Acme-Morrison Metal Stitches to fasten metal to metal or to non-metallic materials. You can use wire stitches instead of rivets, screws, nails, bolts or spot welding. You can save substantially in time and money by doing so.

Acme Steelstrap and Acme Silverstitch box stitching wire—so vital to thrifty and efficient packaging, shipping and materials handling—are still subject to an enormous military and civilian demand. But you can still work with your Acme Steel representative on ways to increase efficiency and eliminate waste, thus stretching the supply available to you.

In these important tasks, we are ready and willing to help you today—the way we have been helping Acme Steel customers for 71 years.

ACME STEEL COMPANY Dept. CP-91, 2838 Archer Avenue, Chicago 8, Illinois

Write if you do not know your nearest Acme Steel Service Office—located in 41 principal cities of the United States and Canada.



5 things you can do to keep your Acme-Morrison Metal Sticher on the job!

1. Clean and oil every day.
2. Never operate sticher without material in stitching position.
3. For perfect stitching, check work regularly. If in doubt about any operating difficulty, refer to service manual (additional copies sent upon request) or submit stitched material, identified by machine
4. From time to time moving parts need replacement—keep a supply on hand to make quick, minor replacements.
5. Ask us about the Acme Steel "3-WAY SERVICE PLAN" for equipment repairs.

ACME STEEL CO.
CHICAGO

**ACME
STEEL**

Acme Steel employees on December 31, 1950, numbered 4,098 men and women, an increase of 8.18 per cent over 1949. Monthly employee turnover average in 1950 was only 1.7 per cent in spite of the growing manpower needs of the armed services.

ACME STEELSTRAP flat steel strapping and ACME UNIT-LOAD carload bracing BAND, SEALS and TOOLS • ACME SILVER-STITCHERS and ACME SILVERSTITCH WIRE for box stitching • ACME-MORRISON METAL STITCHERS and BOOK STITCHERS • ACME-CHAMPION BAG STITCHERS • ACME HOT AND COLD ROLLED STRIP STEEL • ACME GALVA-BOND steel slot stock for Venetian blinds • ACME STEEL SPECIALTIES, including hoops, corrugated fasteners, barbed box straps, nail-on strapping and other container reinforcements • ACME STEEL ACCESSORIES—snips, tool mounts, reel stands, coil holders, coil trays.

When inquiring check CP 6578 on handy form, pgs. 2-3

MATERIAL HANDLING

Chain drive selection

Catalog assists in determining interchangeability of various makes of roller and conveyor chains. Additional information deals with the proper application of chain drives as a power transmission or conveying medium. Catalog HD-51 is issued by Whitney Chain Company, Dept. CP, 237 Whitney St., Hartford 2, Conn. When inquiring specify CP 6579 on handy form, pages 2 and 3.

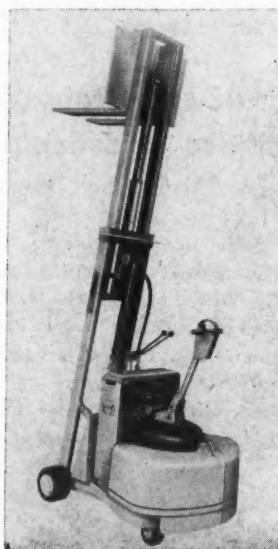
Four new electric trucks keep finger-tip control item of predecessors . . .

retain electric lift and travel, walking operator characteristics

Uses: For material handling where heavy loads must be raised a number of feet as well as moved in any direction.

Features: Compactness and short turning radius give easy maneuverability in close quarters. Designed to minimize physical effort, and to multiply amount of material a single operator can move, lift and store in a given time period.

Description: (1) Telescopic tilting fork truck, illustrated, is applicable for fast and economical movement and stacking of pallet, skid and box loads. Total lift of 121¼", capacity of 2000 lbs and a 24" load



center. (2) Non-tilt fork truck for operations where fork elevation of 61¼" is adequate and tilting is not required. Capacity of 2000 lbs with 24" load center. (3) Straddle type fork truck has a lifting height of 68", capacity of 4000 lbs and up to 30" load center. (4) Power

OMEGA

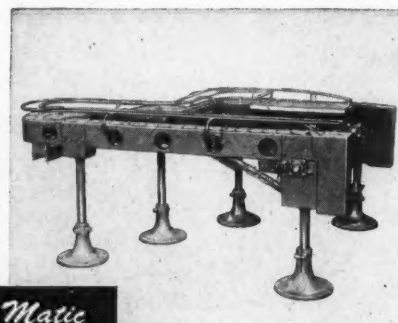
THE LAST WORD IN FEEDERS . . .

— for dry materials . . . sea coal, trap rock, Vinylite, hydrated lime, zinc hydrosulphite, activated carbon—and liquids . . . acids, chemical solutions, and suspensions. For Bulletins and complete information, address Omega Machine Company (Division of Builders Iron Foundry) 387 Harris Ave., Providence 1, R. I.

OMEGA MACHINE COMPANY

When inquiring check CP 6580 on handy form, pgs. 2-3

Reduce
Handling
Costs!



**Styl-O-Matic
LATERAL CURVE
BOTTLE & CONTAINER
CONVEYOR**

**KEEPS PRODUCTION
FLOWING SMOOTHLY**

A VERSATILE, economical unit for the food, dairy, beverage, etc. field. Conveys in straight line, around curves (0° to 180°) and up or down normal inclines or declines. Available in steel or stainless steel, with or without pack-off tables. Only one power unit is needed as there are no corner brackets.

WRITE FOR FREE BULLETIN

about this flexible, smooth operating unit that lowers costs and increases production. Ask for Bulletin No. ST-1. Dept. CP9



ISLAND EQUIPMENT CORP.
27-01 Bridge Plaza North
Long Island City 1, N. Y.

When inquiring check CP 6581 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Neff & Fry Bins defy the elements

Coal barges were tied up to Neff & Fry Bins during an Ohio River flood. After the waters receded, the bins were as sound as ever.

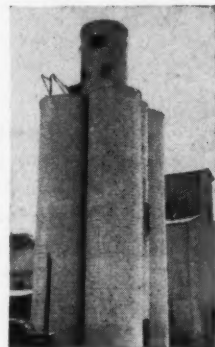
Tornadoes have destroyed adjacent buildings without damaging the walls of Neff & Fry Bins.

More important, normal year-round weather has little effect on the Super-Concrete Staves of which Neff & Fry Bins are built. The staves are hard and dense. They do not rot, burn, rust, or spall. They require no face-lifting and painting, although owners sometimes paint them for esthetic reasons.

All the distinctive advantages of Neff & Fry Bins are explained in our folder, "Bins with the Strength of Pillars." Be sure to read it before you purchase structures for handling flowable bulk materials. Write for it now while the subject's on your mind.

Not exported except to Canada and Mexico.

THE NEFF & FRY CO.



Four Neff & Fry Grain Bins at Liberty, Ind.

166 Elm St.
Camden, Ohio

SUPER-CONCRETE STAVE STORAGE BINS **NEFF & FRY**

When inquiring check CP 6582 on handy form, pgs. 2-3

MATERIAL HANDLING

Ox truck operates in lifting, moving and stacking skid and box loads. Has platform elevation of 72½", and a capacity of 4000 lbs.

Source: Hi-Lift line may be obtained from Barrett-Cravens Co., Dept. CP, 4609 S. Western Blvd., Chicago 9, Ill. . . . or for more information check CP 6584 on handy form, pages 2 and 3.

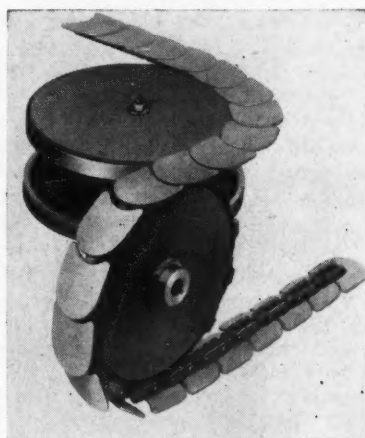
Conveyor chain flexes horizontally and vertically . . .

one power source eliminates transmission parts at transfer points

Uses: Designed primarily for tip-free conveying of bottles, jars, packages or small parts.

Features: Transfer points are eliminated in the conveyor system because conveyor flexes in two planes and curves around corners with radius as small as 6 inches. This feature does away with danger of containers being chipped, tipped or otherwise damaged as they transfer from one chain or conveyor to another.

Description: Consists of carbon or stainless steel crescent-shaped top plates mounted on links which are connected by a universal joint. Top plates are induction welded to the chain links. Chain operates over special cut-tooth sprockets, and at corners around horizontal idler disks,



14 inches in diameter. Two disks are used at each corner, one for the carrying strand and one for the returning strand. Speed at which chain can be run is determined by the product being handled and by the length of the conveyor.

Source: Chain Belt Co., Dept. CP, 1600 W. Bruce St., Milwaukee 4, Wis. . . . or for more information check CP 6585 on handy form, pages 2 and 3.

Wouldn't your car look silly



...with a CHAIN DRIVE?

HOW ABOUT YOUR LIFT TRUCKS?

Chain drives are as obsolete in lift trucks as in autos. To prove it, check your maintenance and downtime records. You'll find chain drive failures account for the greatest percentage of costs.

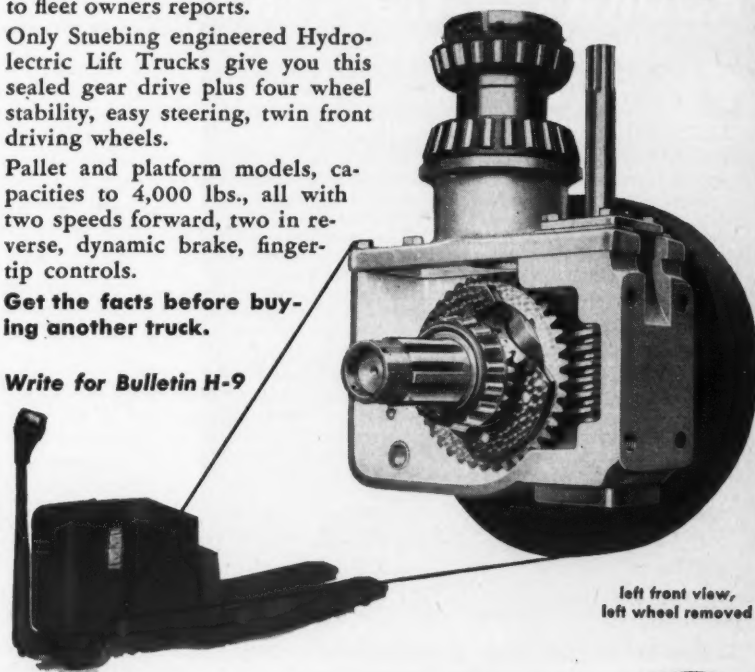
That's why W. C. Stuebing, founder of the lift truck system, builds true differential drive, the same as in your modern auto, into Hydro-lectric Lift Trucks. With all gears and running parts sealed in lubricant this differential drive outlasts chains ten to one according to fleet owners reports.

Only Stuebing engineered Hydro-lectric Lift Trucks give you this sealed gear drive plus four wheel stability, easy steering, twin front driving wheels.

Pallet and platform models, capacities to 4,000 lbs., all with two speeds forward, two in reverse, dynamic brake, finger-tip controls.

Get the facts before buying another truck.

Write for Bulletin H-9



left front view,
left wheel removed

LIFT TRUCKS

INCORPORATED

2425 SPRING GROVE AVE. • CINCINNATI 14, OHIO



When inquiring check CP 6586 on handy form, pgs. 2-3

EXTRA SAFETY for Users of

ICC-17H DRUMS



Patent Applied for.

Tests have shown that in the majority of cases failure of 17H drums to meet the drop test is due to leakage at the small gap between the ends of the locking rings.

We have developed and are now able to supply an overlapping ring which eliminates this gap. It will pay you to specify DRUM PARTS OVERLAPPING RING on your orders for 17H drums. **Samples on request.**

This is another development by DRUM PARTS, INC., manufacturers of locking rings exclusively and originators of DRUM PARTS SYSTEM.

DRUM PARTS, INC.

10311 MEECH AVE. CLEVELAND 5, OHIO

When inquiring check CP 6583 on handy form, pgs. 2-3

Use Self-Dumping Containers

MORE
Material Handling
50% Less Time



WITH
ROURA Self-Dumping HOPPERS
—they pay for themselves



Only ROURA Has the Exclusive (PATENTED) Instant Release Handle

Handling wet or dry, hot or cold, bulky materials quickly and easily, the ROURA is simple to operate—only one man is required for distributing and unloading—and he does this in much less time than ordinarily required under old-fashioned manual methods. Thousands of Roura Hoppers (which fit any standard fork or platform lift truck) are in constant daily operation, serving and saving for such firms as Owens-Illinois Glass, Corning Glass, National Fireproofing, General Motors, Ford, Chrysler, American Brake Shoe, General Electric, Westinghouse, Western Electric, American Steel Foundries, International Harvester, John Deere, etc.

By a simple lift of the exclusive release handle, the ROURA HOPPER dumps, rights and locks itself securely. Sizes— $\frac{1}{2}$, $\frac{3}{4}$, 1, $1\frac{1}{2}$ and 2 cubic yards; the ROURA HOPPER can also be designed for flat trucks and in other sizes to meet specifications. Also, it can be equipped with special flanges that permit stacking to desired tiers for storage or future distribution of materials—conserving valuable floor space. Priced below all competition, the ROURA will quickly pay for itself many times over.

—Can Be Coated With Acid-Resistant Paints
Write today for detailed brochure, "In Dollars & Sense."

ROURA IRON WORKS, Inc.
1413 Woodland Ave. Detroit 11, Mich.

When inquiring check CP 6587 on handy form, pgs. 2-3

Page 100

MATERIAL HANDLING

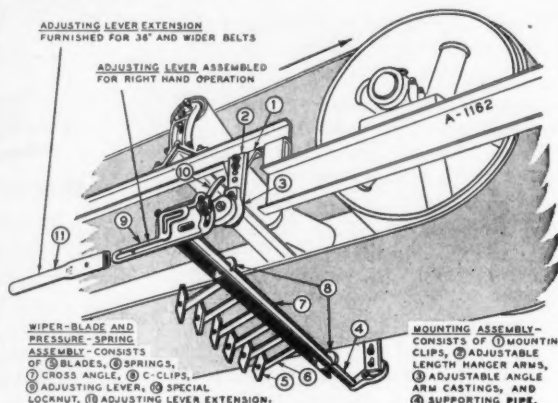
Cleans and dries belt conveyor, dropping material into discharge chute . . .

spring steel wiper blades maintain a firm pressure, but glide over belt splices

Uses: Used on belt conveyors carrying wet or adherent material.

Features: Combination of plow and spring wiper action allows complete cleaning and drying without catching on obstructions like belt splices.

Description: The S-A Spring Type Cleaner consists of a row of thin spring steel wiper blades, set perpendicular to the belt surface, but diagonal to the belt travel. Each blade is pivoted upon an individual flat spring, which presses the wiping blade gently, but firm-



Drawing shows all major components of belt cleaner as installed on belt

ly, against the belt. The pivoted connection allows each blade to seat uniformly on the surface of the belt. As the belt travels past the cleaner, each blade wipes a path clean and dry. Blades overlap to cover the entire carrying width of the belt. Dirt and slime cannot crowd past blades. Material falls into discharge chute with the rest of belt delivery.

Each cleaner consists of two unit assemblies: the wiper blade and pressure spring assembly, which includes a cross angle, a pressure adjusting lever and locking screw, and two C-shaped clips, which support the assembly and permit easy removal for replacement of blades; and the mounting assembly, which can be adapted to suit any conveyor frame.

Adjustments and replacements can be made without stopping the conveyor. Blade pressure can be regulated by means of the hand adjusting lever. Wiper blades can be reversed, or replaced, by relieving blade pressure and sliding the blade assembly from the frame.

Source: Manufactured by Stephens-Adamson Mfg. Co., Dept. CP, Aurora, Ill. . . or for more information check CP 6588 on handy form, pages 2 and 3.

Vibrating feeders, conveyors shown in action

Two-color, 84-page catalog uses drawings and hundreds of photographs of vibrating feeding and conveying equipment to show the range of available designs. Operating principle of the equipment is that impact of a vibrating armature, set at an angle to the horizontal deck, throws individual particles into a trajectory in the



... A fast, inexpensive, breaker-elevator unit for crushing solidified chemicals and other materials used in the process industries.

Here, Gifford-Wood offers a stainless steel, corrosion-proof breaker-elevator combination with capacities up to 20 tons per hour. Special engineered units are available up to 40 tons per hour. Crushers are furnished with fine and coarse combs which are adjustable to meet a variable size product from $\frac{1}{2}$ inch to 5 inch particles. Write your nearest G-W office for complete details on our full line of highly efficient, long lasting and economical crushers. In writing, ask for bulletin 482.

GIFFORD-WOOD Co.

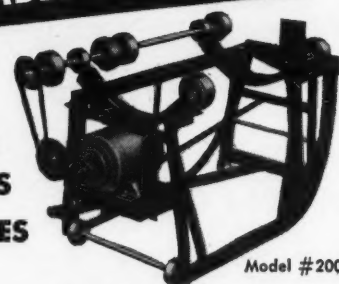
Since 1814

Hudson, New York

NEW YORK 17, N. Y. CHICAGO 6, ILL. ST. LOUIS 1, MO.
420 LEXINGTON AVENUE 565 W. WASHINGTON ST. RAILWAY EXCHANGE BUILDING
When You Think of Materials Handling—Think of GIFFORD-WOOD CO.

When inquiring check CP 6589 on handy form, pgs. 2-3

MORSE
PORTABLE ROTATOR



Model #200

- MIXES
- CLEANS
- TUMBLES

A retractable caster frame offers simpler handling of containers with the Morse Rotator. Two Neoprene Drive Wheels prevent creeping. Four drive wheels give positive driving action and two idler wheels with Torrington Needle Bearings make the Morse Rotator a smoothly operating unit. Tipping lever included with each Rotator. Write for free folder showing complete Morse line.

Less motor and drive—Wt. 75 lbs. \$128.50
Complete with motor—Wt. 155 lbs. \$198.50

MORSE MANUFACTURING CO., INC.
124 Dickerson Street Syracuse 2, N. Y.

When inquiring check CP 6590 on handy form, pgs. 2-3

CHEMICAL PROCESSING

MATERIAL HANDLING

line of motion. Frequency of vibration in most of the equipment is fixed, control being through amplitude.

Capacity range of equipment shown is from a few ounces to 2000 tons per hour. Sizes from 1 micron to 4 foot cubes are handled at densities running from 4 to 400 pounds per cubic foot. Designs have been evolved for many unusual installations. Feeders handling furnace charges or other hot materials up to 2000°F as well as units working at 30° below zero are among the equipment.

All the equipment is shown under two groupings; first, by size, type and capacity, and second, by typical application. In the latter section, feeding applications with crushers, screens, tram cars, furnaces, inspection belts and many other types of equipment are shown.

Illustrative sections show special units such as spreaders, grizzlies, and mechanical types.

Catalog also includes many control units and other auxiliary equipment including bin-level indicators, bin-valves, roller-, screw-, and apron-conveyors, as well as examples of other equipment manufactured. In addition a short section of pertinent engineering data is given. Catalog 830 is issued by Jeffrey Mfg. Co., Dept. CP, Columbus 16, Ohio. When inquiring specify CP 6591 on handy form, pages 2 and 3.

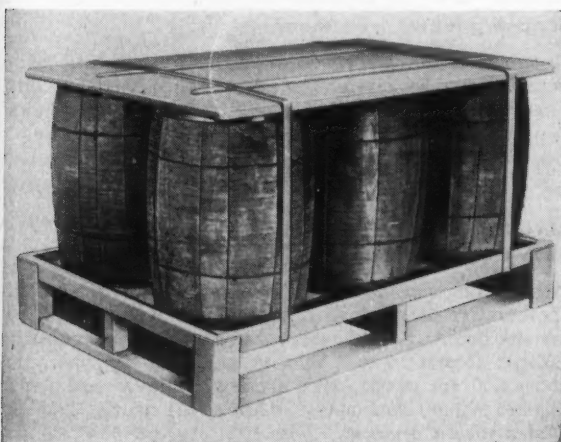
Palletizing kegs in lots of 6 speeds handling, stacking with fork truck . . .

pallet deck recessed slightly to add to load's stability; dimensions are 42 x 28"

Uses: Unitizes loads of 6 standard kegs for easy, safe handling and stacking to heights that would be impractical with unpalletized kegs.

Features: Entire pallet made of heavy gauge steel and welded throughout.

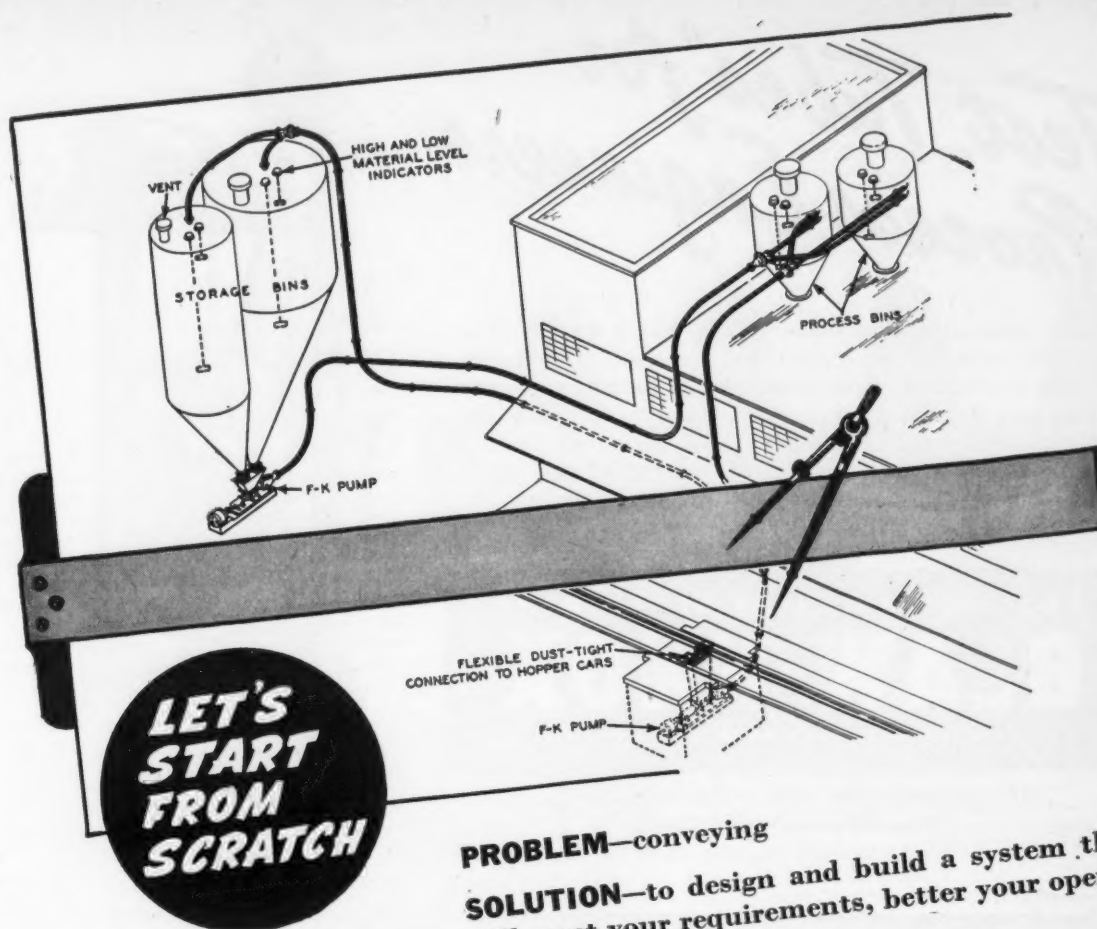
Description: Accommodates 6 standard kegs on a 42 x 28" deck. Deck is recessed slightly to prevent kegs



Steel keg pallet with steel cover

from rolling off when unit is being moved. For protection of keg contents, and to provide additional stability in stacking, cover is attached with steel bands.

Source: Model KP-6 keg pallet and cover are built by Phillips Mine & Mill Supply Co., Dept. CP, 2339 Jane St., Pittsburgh 3, Pa. . . or for more information check CP 6592 on handy form, pages 2 and 3.



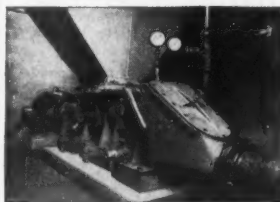
PROBLEM—conveying
SOLUTION—to design and build a system that will meet your requirements, better your operation

Fuller Company occupies a unique position in the field of pneumatic conveying of dry pulverized and granular materials. It designs and manufactures four primary types, from which it can select that best adapted to specific requirements; in other words, equipment best suited to do the work most efficiently and economically, with the materials to be handled.

Each job should be considered separately. That's why we say, "Let's start from scratch" . . . when the plant is in the design stage. A preliminary study should be made of local conditions, so that proper equipment can be recommended. The selection of the type of equipment, and its layout, best adapted to satisfy any individual set of conditions, should be

made by specialists of wide experience in the engineering of pneumatic conveyors. We strongly urge all prospective purchasers to avoid the preliminary engineering, but to permit us to submit a recommendation, or engineering study, comprising a proposal drawing and estimate for your approval, or the approval of your consulting engineers.

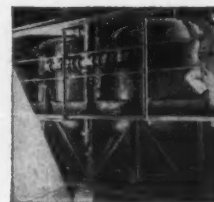
Fuller Company has a tangible resource in the years of experience and training of its personnel in all phases of pneumatic conveying. Its engineers are at your service, ready to make studies of your requirements, and suggest means for the betterment of your operation. You're under no obligation for this service.



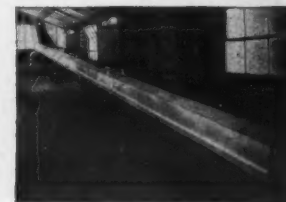
FULLER-KINYON



AIRVEYOR



FULLER-FLUXO



F-H AIRSLIDE

DRY MATERIAL CONVEYING SYSTEMS
AND COOLERS—COMPRESSORS
AND VACUUM PUMPS—FEEDERS,
AND ASSOCIATED EQUIPMENT
G-57

Fuller

FULLER COMPANY, Catasauqua, Pa.
120 So. LaSalle St., Chicago 3
420 Chancery Bldg., San Francisco 4

When inquiring check CP 6593 on handy form, pgs. 2-3

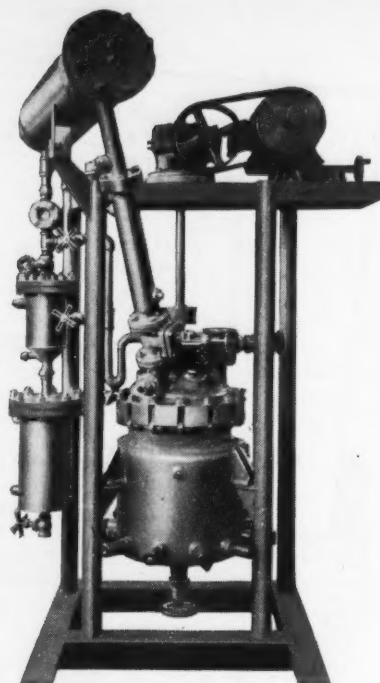
"Test Tubes" for Process Engineers

Results obtained via Blaw-Knox Pilot Plants determine at very small cost the equipment and technique essential to full-scale production. With Electro-Vapor heating and water cooling very little hook-up is required, and their versatile design facilitates frequent runs of varied formulas. From a description of the process involved, we can quickly quote standard or special equipment that will meet your requirements. Write for Bulletin 2273.

PROCESS EQUIPMENT DEPARTMENT
BLAW-KNOX
DIVISION OF BLAW-KNOX COMPANY

2076 FARMERS BANK BLDG., PITTSBURGH 22, PA.
Other Offices in Principal Cities

When inquiring check CP 6594 on handy form, pgs. 2-3



Typical arrangement for 15-gallon and 35-gallon Electro-Vapor pilot plants is illustrated. Similar units with capacities up to 100 gallons are rendering highly satisfactory service to our many customers.

ARCO DEPENDABILITY

ARCO
RUBBER LINED CHEMICAL
INDUSTRY EQUIPMENT

Our engineering background, manufacturing experience and complete facilities enable us to produce equipment, in any size, of dependable quality. ARCO equipment gives maximum service with minimum maintenance.

Our New Giant Vulcanizer

Let us send you our catalog describing ARCO rubber lined pipe, open and closed tanks, pressure vessels, exhaust systems and complementary equipment for all fields of chemical processing.

**AUTOMOTIVE RUBBER
COMPANY, INC.**

8601 EPWORTH BLVD. • DETROIT 4, MICH.

ANYTHING CAN BE COVERED WITH RUBBER

When inquiring check CP 6595 on handy form, pgs. 2-3

Briefs . . .

Relation of water supply to U.S. industrial strength

Paper calls attention to the lowering of water tables in certain localities. States increase in water requirements by basic industries over a ten year period, and divides uses into cooling, processes, boiler feed water, and sanitary purposes.

Estimates increased water requirements over next ten years in eight major industries. Quotes estimated figures covering gallons of water required in processing eleven products. Includes suggestions on how water may be saved in several processing operations. 3 pages, 2 figures, 3 tables. ("Petroleum Refiner," June 1951, page 75)

Thermophilic fermentation of cellulosic and ligno-cellulosic materials

Utilization of waste wood was objective of this research. A culture of thermophilic bacteria was made which proved more effective than those previously studied. Production of organic acids is tabulated. Effects of some variables on acid production are also tabulated. 5 pages, 6 tables, 4 figures. ("Industrial and Engineering Chemistry," June 1951, page 1384)

Heat transfer by direct contact between liquid and vapor

Paper presents results secured in the commercial operation of three separate types of contacting equipment. Systems were conflow downward, empty spray tower, and counter flow tower (disc and doughnut baffle in one section, perforated side-to-side baffles in another section). Diagram shows equipment and flow lines. 6 pages, 3 figures, 2 tables. ("Chemical Engineering Progress," June 1951, page 309)

Choosing water treatment

A summary and comparison of methods now being practiced. Examples given of results attained applying different methods to waters of varied composition. Includes 7 pages, 4 tables. ("Trans. Institution of Chem. Engs. London", Vol. 26, page 42)

Mass spectrometry of heavy hydrocarbons

Authors describe the modifications made in a commercial spectrometer to adapt it for the desired purpose. Stated are the necessary techniques required. Results on hydrocarbons from C14 to C32 with molecular weight up to about 600 are given. Mass spectra are determined for a number of pure compounds. 42 pages, 21 figures, 2 tables. ("Analytical Chemistry," June 1951, page 830)

Principles of reactor design for homogeneous reactions

Authors show that for a useful development of reactor design principles, classification on the basis of number and type of reacting phases involved is more satisfactory than the earlier unit process concept. Present a simplified method for: a) Correlating kinetic data of homogeneous

CHEMICAL PROCESSING

from contemporary publications

Here's a quick look at interesting articles, appearing in other publications . . . as selected by Technical Editor, H. McCormack

reactions; and b) application of such data in design of homogeneous reaction equipment. Methods by which simplification of calculations are attained are presented and discussed. Includes 6 pages, 6 tables and 3 figures. ("Chem. Eng. Progress", July 1951, page 333)

Employer-employee responsibilities in occupational hazards

Author comments on the responsibility of the employer to provide necessary safety devices and on the responsibility of the employee in making use of them. Cites some court decisions relating to known and unknown hazards and to risks inherent in the job. ("Plant Engineering", Aug. 1951, page 91)

Toxicity hazards

Article discusses the hazards in applying the customary insecticides and fungicides — hazards both to the one who applies them and to the crop. Emphasizes the importance of knowing these hazards, and the precautions required before using any of these materials. Factors modifying effects on plants are enumerated. Data regarding toxicity are tabulated. 3½ pages, 2 tables. ("Agricultural Chemicals", May 1951, page 35)

Chemistry of ethylene oxide

Two related papers are presented as parts II and III on this topic. Number II discusses the kinetics of the reaction of ethylene oxide with amines in aqueous solution, and III the reaction of ethylene oxide in amine solution. Includes 21 pages, 14 tables and 5 figures. ("Canadian Journal of Chemistry", July 1951, page 575)

Aromatics recovery by solvent refining

A discussion of the problems involved in separating paraffinic and aromatic compounds resulting from petroleum processing. Present laboratory data as to the highly selective solvent action of β, β' -oxydipropionitrile. Six tables show distribution factors. Certain generalizations are stated which have to do with distribution as related to structural formula of compound. Includes 4 pages and 7 tables. ("Petroleum Refiner", July 1951, page 97)

Fatty alcohols by high pressure hydrogenation

Article describes a recently constructed plant operating in the United States. Operating techniques are commented on and advantages indicated. Plant requirements (basis 1000 lb higher alcohols) with regard to materials, services, and major operating features are tabulated. 3 pages, 1 diagram, 3 tables, 4 photos. ("Chemical Engineering", June 1951, page 117)

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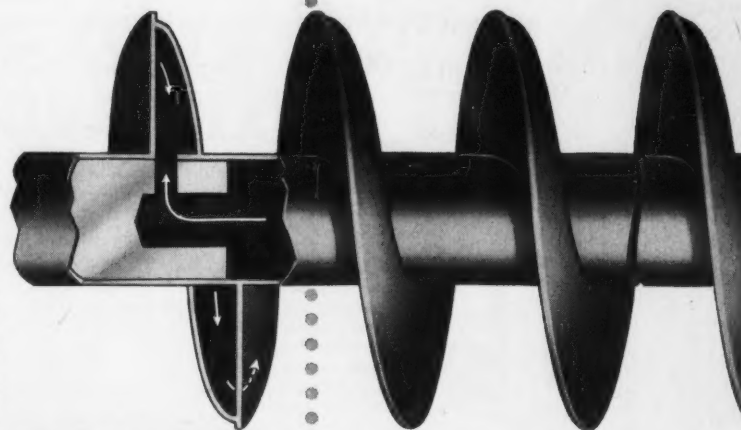
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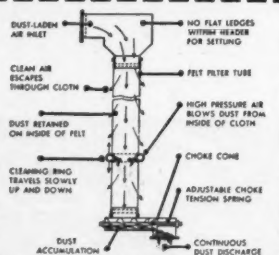
The soundness of the Day Type "AC" Dust Filter principle, effecting outstanding efficiency of operation with minimum maintenance, is verified by industry itself. 87% of our production of Day Type "AC" Dust Filters is channeled to meet the demands of users who are witnessing the results in their own plants—and reordering.

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- **CONTINUOUS-AUTOMATIC OPERATION**... the use of slow traveling, reverse jet cleaning rings gives automatic-continuous operation without shutdowns for cleaning.
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- **HIGH AIR-TO-CLOTH RATIO**... 10, 15 or even 20 to 1 ratios maintained with uniform back pressures.
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- **NO DUST-CATCHING LEDGES**... DAY TYPE "AC" FILTERS, with a pattern of square-to-round inlet fittings, have no flat surfaces where dust can accumulate and become contaminated.
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BRIEFS

Mixed hydrocarbon solvents for fatty acids, their triglycerides

Paper presents the results of an experimental investigation of the solubilities of certain fatty acids in mixtures of methane and propane. Equilibrium data presented for the system stearic acid-propane-methane at 85.4°C and 71.2°C; for trimyristin-propane-methane at 69.6°C and 61°C. Shows how use of methane mixtures increases the versatility of propane as a selective solvent. Includes 7 pages, 9 figures and 6 tables. ("Chem. Eng. Progress", July 1951, page 347)

Catalytic olefins esterification with organic acids

Objective of investigation was to find a more effective catalyst for the desired reaction. Such a catalyst was found and limitations of the reaction are discussed. Catalyst recovery was solved. Reactor corrosion is commented on. Etherification is briefly studied. Includes 4 pages, 5 tables, bibliography. ("Ind. & Eng. Chem.", July 1951, page 1596)

Analyses of mixtures of aliphatic alcohols

Method is described by which methanol, ethanol, isopropanol, N-butanol and iso-amyl alcohol were first separated and then estimated quantitatively. Necessary reagents are stated and details of preparation given. A complex mixture of volatile fermentation products is used to test this method. It is also tested on mixtures of known composition. Data are tabulated. Includes 6 pages and 4 tables. ("Canadian Journal of Chemistry", July 1951, page 552)

Protein evaluations of yeast grown on wood hydrolyzate

Investigation was undertaken to determine conditions of maximum growth of six fast growing strains of yeast using wood hydrolyzate as the nutrient media. Continuous propagator was used. Conversion from 90 to 96% of reducing substances present was secured. Yeast yields and protein contents are stated. Details of equipment and procedure are stated. Yeasts were compared with casein as a rat food. Includes 3 pages and 4 tables. ("Ind. & Eng. Chem.", July 1951, page 1593)

Determining nitrites in presence of nitric acid

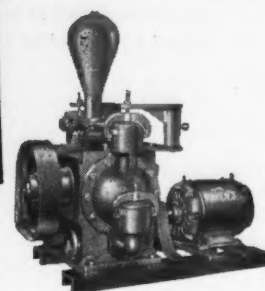
Author states the purpose of the investigation was to study the effect on nitrite determination when permanganate solution is acidified with nitric rather than sulfuric acid; the effect of impurities commonly found in nitric acid; methods for removing interfering elements from concentrated nitric acid; and determine stability of sodium nitrite solutions. Reagents, technique and results are stated. Includes 3 pages, 5 tables. ("Analytical Chemistry", July 1951, page 980)

Chemical engineering aspects of handling sterile products

Author comments on those methods of processing wherein medicinal products diverge from customary chemical processing. Cites the various methods used to sterilize containers and products and states conditions found to be

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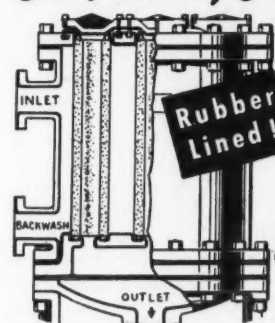
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CHEMICAL PROCESSING

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BRIEFS

satisfactory when using different methods. Discusses necessary aseptic manipulations and the filling of ampules, vials, bottles, etc. Six pages including 2 pages of discussion. ("Trans. Institution of Chem. Engs. London", Vol. 26, page 1).

Cooling of circulating water for coolers, condensers

Author states various kinds of coolers which may be used. Assumes certain basic costs per 1,000 gallons for make-up water, steam and electricity. Graphs cooling rates and operating costs for spray ponds, natural and forced draft cooling towers. Comments on cooling by vacuum evaporation and by refrigeration. Graphs operating costs for different types of coolers, operating at capacities from 10,000 to 100,000 gallons per hour for a cooling range of 20°F. Includes 11 pages, 19 figures, and 1½ pages of discussion. ("Trans. Institution of Chem. Engs. London", Vol. 26, page 101).

Phosphorus-making furnace rotates

Article describes a furnace which has been used in experimental and pilot plant production of phosphorus from phosphate rock. Presents advantages possessed by a rotating furnace. Schematic drawing and description of furnace. Includes tabulated data for two runs. Includes also, 4 pages, 1 figure, 5 photos and 1 table. ("Chemical Engineering", July 1951 page 109)

Value of statistics to chemical engineers

Author comments on the standard deviations of small samples and sample means, analysis of variations, statistical planning of experiments, quality control charts, correlation and regression, and discontinuous variates. Includes 4 pages. ("Trans. Institution of Chem. Engs. London", Vol. 26, page 73)

Orifice meter readings corrected for flow pulsations

Author presents an approximate method for calculating these corrections. States causes of pulsation errors, and analyzes calculations. States instrumentation required. Includes 4 pages, 3 figures. ("Instruments", July 1951, page 763)

Sulfur compounds as antioxidants

Study was made to discover new antioxidants, resulting in certain types of sulfur compounds that possessed desired characteristics. They are very different from customary aromatic, amino, or hydroxy compounds. Includes 3 pages, and 4 tables. ("Ind. & Eng. Chem.", July 1951, page 1638)

Measure of molecular weight in organic solvents

Objective of research herewith reported was: Measurement of molecular weights in organic solvents using a method formerly deemed applicable only when water was the solvent. Procedures and results are stated. Includes 3 pages, 2 figures, and 3 tables. ("Analytical Chemistry", July 1951, page 947)

PROCESSING MACHINERY BULLETIN

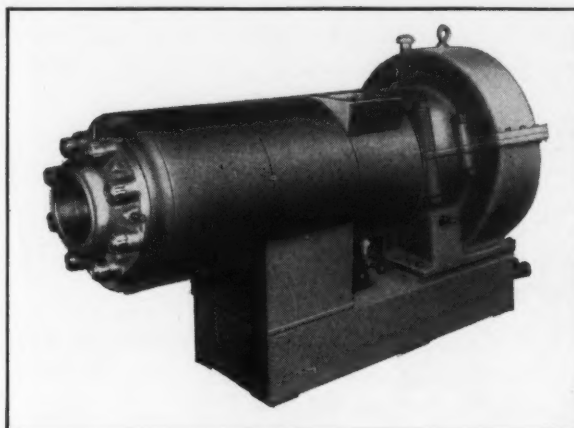
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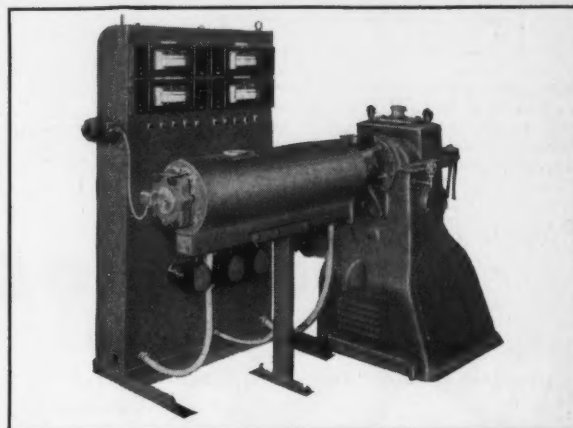
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Many materials that have been difficult to mix and extrude now can be handled continuously by the new NRM Mil-X-Truder. Special NRM construction features permit internal recirculation of material passing through the Mil-X-Truder. This means added mixing for "hard to mix" stocks, the elimination of warm-up mills on standard stocks, plus savings in floor space, labor and maintenance.

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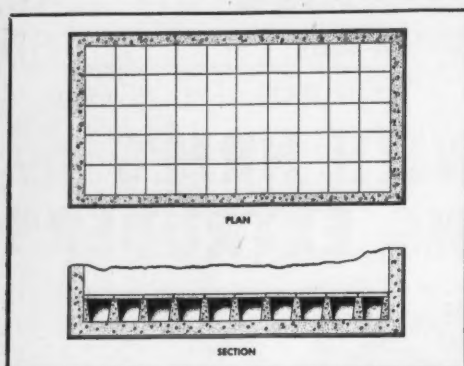
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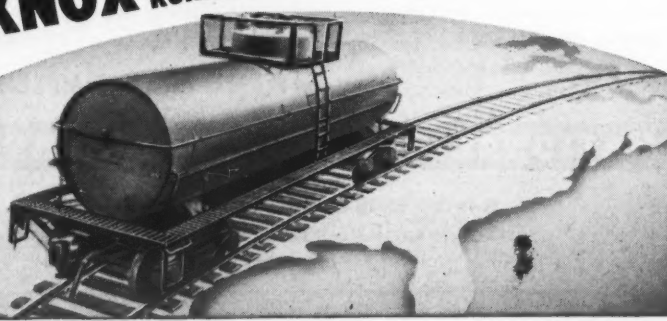
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New

Tank lining stays soft, pliable even with strong oxidants

Four-page bulletin discusses, illustrates and gives considerable data on application of flexible koroseal to lining tanks, vats, etc. Typical materials handled include nitric, sulfuric and chromic acids, bleaches, ammonium hydroxide, barium sulfide, caustic, plating solutions, and many organics. Chief limitations are the chlorinated hydrocarbons and aromatics, gasoline and similar solvents and acetates. Typical service is illustrated by a tank installed in 1937 which has been handling 10-20% nitric mixed with 1-2% hydrofluoric.

Linings can be applied in thicknesses up to 3/32" and are easy to repair if damaged. This material does not absorb liquids being handled, thus it is ready for use with a different liquid after rinsing. Bulletin K is issued by Metalweld Inc., Dept. CP, 26th & Hunting Park Ave., Philadelphia 29, Pa. When inquiring specify CP 6603 on handy form, pages 2 and 3.

Applications of metal bonded diamond tools

Eight-page booklet covers the electro-chemical process of dispersement of diamond particles in a special bonding agent to produce tools able to retain their shape, withstand high speeds, and non-directional cuts. Points out, with accompanying photomicrograph, that each particle is individually set on the working plane embedded to reinforce the adjoining particles. Recommended uses for these tools is in precision grinding, broaching, reaming, counterboring, core drilling, lapping, and cut-offs, where the conservation of material is important. Fast rough cutting and shaping is possible in the processing of glass.

Specifications are given on files, wheels (free and mounted), and a 3" thin wheel with a cutting fin .005" thick. Latter finds application for slotting, or grooving sapphire ceramics and carbide steels. "Metal Bonded Diamond Tools" is issued by Triangle Equipment Company, Inc., Dept. CP, 45 River Road, Nutley, N. J. When inquiring specify CP 6604 on handy form, pages 2 and 3.

Causes and cures of paint film defects

544-page treatise is systematic compilation of paint defects and failures and designed for use as reference work by paint users and manufacturers. Main divisions are: faults which develop during storage, faults developed during application, failures developing shortly after application, and defects of coatings on the finished objects when in use. Sections under main headings indicate the various faults, list the different causes and suggest methods of eliminating and preventing the defects.

Sections discuss such items as: hardening of brushes; dipping bath difficulties; lack of hiding, obliterating power; faults due to the mixing of unsuitable paint materials; detonation and spontaneous ignition of spraying dust; faults characteristic of metallic and polychromatic paints; comparison of various artificial drying methods; failures caused by incorrect thinning; mildew, moss growth and bacterial activity on paint film and its consequences; and, staining through all kinds of paint films.

Interesting section under damage to health subdivision

Literature

lists physiological effects of injurious and toxic substances (mainly organic) used in paints, varnishes, etc. Materials are tabulated according to type of illness or injuries induced and indicated counter measures or first aid. Also included are sections connected with paint failures as they occur in typical damp climates and developments in the raw material side of the paint and varnish industry. Illustrated with 87 photographs, book contains postscript of terms and definitions, large bibliography, and author and subject indices.

To obtain "Paint Film Defects" remit \$12 direct to Reinhold Publishing Corp., Dept. CP, 330 West 42nd St., New York 18, N. Y. When inquiring specify CP 6605 on handy form, pages 2 and 3.

Shows stainless steel strapping for expanding-contracting surfaces

Four-page bulletin presents a typical installation of corrugated stainless steel strapping used in binding insulation to a tank. Explains strapping's characteristic of keeping constant pressure on surface which it binds, in response to variations in temperature. Resistance to corrosive action of most chemical fumes and mild acids is stated. Mentions general application of holding insulation around pipe, drums, tanks or other equipment which expands and contracts.

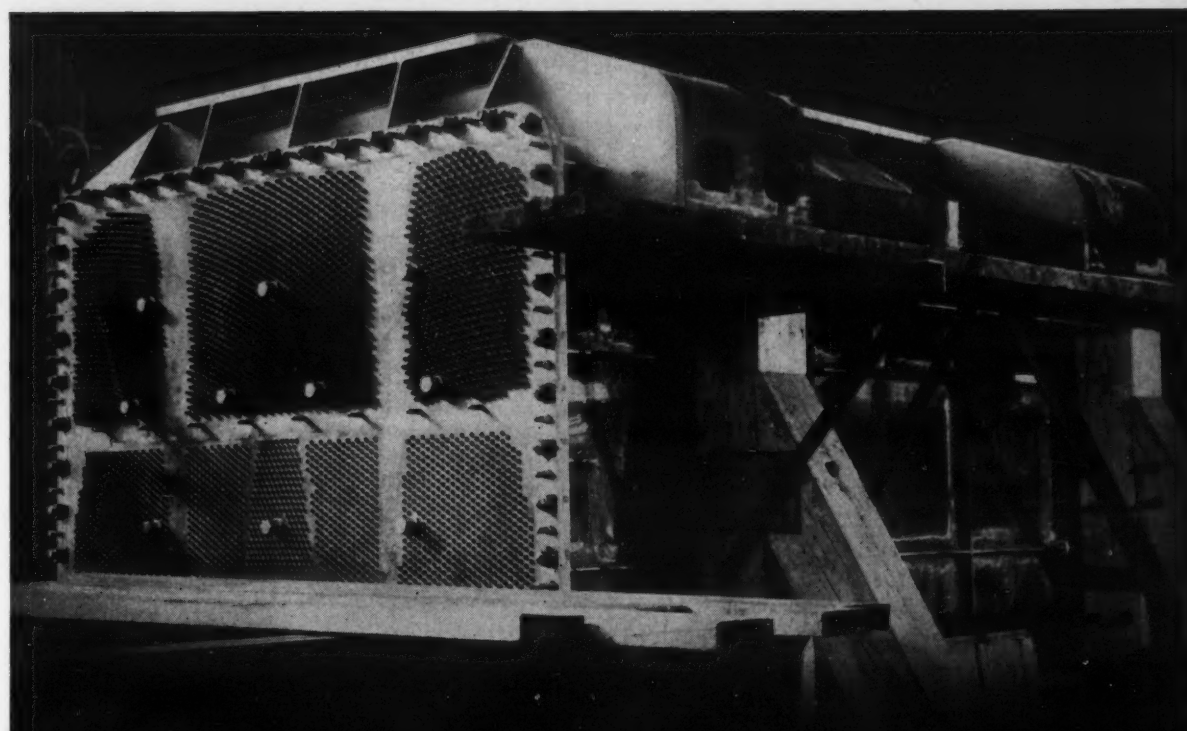
A graph shows a non-linear increase of 0 to 390 lbs in the tensional load applied to vessel being bound, as the length of strapping increases from 12 to 15½". Ability to increase size results from 5 ft corrugated sections alternating with 5 ft plain sections. Physical property table lists 15 characteristics such as yield strength of 136,000 psi (approx), width of ¾", thickness .022"-.023", and material type 304, ¼-hard stainless steel. "Expand-R-Strap" is issued by A.J. Gerrard & Co., Dept. CP, 1950 N. Hawthorne Ave., Melrose Park, Ill. When inquiring specify CP 6606 on handy form, pages 2 and 3.

Case history shows plant capacity increase

Four-page publication tells of methods used by cleaning products manufacturer to increase his plant capacity to four times its original level. In addition to purchasing a street running between two plant buildings and constructing an enclosed shipping dock there, owner added a material handling system employing industrial trucks. Job Study 104 is issued by Towmotor Corporation, Dept. CP, 1226 E. 152nd St., Cleveland 10, Ohio. When inquiring specify CP 6607 on handy form, pages 2 and 3.

Vertical condensate return unit data and selection tables

Data contained in six-page bulletin is indicated for steam heating systems with a range from 1000 to 8000 sq ft EDR, and pressures from 10 to 30 psi where returning condensate flows to a collection point under pressure or gravity. Tables give EDR sq ft, capacity in gpm at 210° F, receiver capacity in gallons and range of models according to boiler pressure. Specifications and installation dimensions are included for the vertical condensate units. Catalog Section 212 is issued by Roy E. Roth Company, Dept. CP, 2484 Fourth Ave., Rock Island, Ill. When inquiring specify CP 6608 on handy form, pages 2 and 3.



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In addition to cupro-nickel, Revere also makes tubes and sheets in other alloys, such as Admiralty, Muntz

Metal, Naval Brass, Aluminum Bronze, etc. Choice of the correct alloy depends on the conditions it must encounter. Revere will gladly collaborate with you on matters involving condensers and heat exchangers.

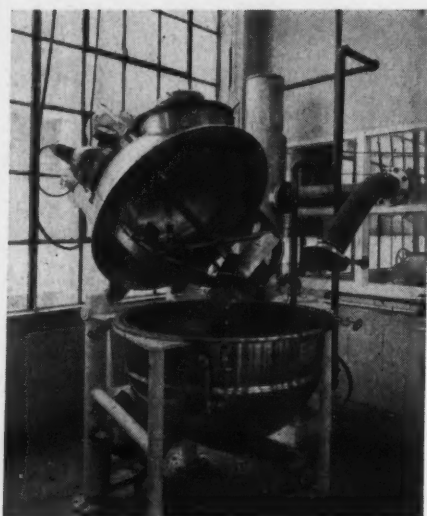
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GREATER UNIT CAPACITY with BUFLOVAK-DOPP PROCESSING KETTLES



A hinged cover, supporting the drive and agitator, gives complete accessibility to this BUFLOVAK Stainless Steel Processing Kettle.

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NEW LITERATURE

Graphs give characteristics of 5 refractories

Illustrations, photographs, charts and graphs are used to detail special refractory materials in 20-page bulletin. Literature gives technical information on a group of refractories which are electric furnace compounds held together by special types of bonds. Group includes bonded silicon carbide, fused aluminum oxide, electric furnace mullite (aluminum silicate material) and fusion cast high alumina.

Along with presenting typical applications, bulletin contains graphs and tables showing how various refractories behave when subjected to constant loads while heated at a prescribed rate; thermal conductivity; modulus of rupture at 2460°F; relative resistance to spalling; permeability to cold air; and relative resistance to abrasion. "Super Refractories" is issued by The Carborundum Company, Refractories Division, Dept. CP, Perth Amboy, N.J. When inquiring specify CP 6611 on handy form, pages 2 and 3.

Tubing company's organization and products discussed

Plant organization, photographs of operations and machinery, and numerous applications of products are treated in 32-page booklet of tubing company. Aspects of quality control of the manufactured products are discussed. Booklet uses many illustrations showing the applications of tubular products by the armed forces. Data and reference material include tables covering hardness conversion, standard sizes of square and rectangular tubing and specifications on round tubing from $\frac{3}{8}$ to 3" outside diameter. "Nikoh Quality Tube" is issued on letterhead request to Nikoh Tube Co., Dept. CP, 5000 S. Whipple St., Chicago 32, Ill.

Candid "how to do it" stories in folder on metal hardener

Six-page folder reports on product for emergency or other temporary surface hardening with a welding torch. Application is for any ferrous metal in the form of steel tools, parts, edges, threads, dies or drills. Four photographs illustrate use in prolonging life of steel wire guides, wrench, punch press and hand shear. Includes three case histories describing how product was used in hardening machinist's chisels, valve insert rings and a screwdriver. "Eutectic Instant Hardner" is issued by Eutectic Welding Alloys Corporation, Dept. CP, 40-40 172 Street, Flushing, New York, N. Y. When inquiring specify CP 6612 on handy form, pages 2 & 3.

Gives possibilities of applying radioactivity to chemistry

Representing a thorough search of the literature, 604-page book furnishes a comprehensive summary of information concerned with applying radioactivity to various fields of chemistry. Treatise has been written for the reader with a good knowledge of chemistry but not necessarily more than an elementary knowledge of radioactivity. Intended primarily as a reference book, it is divided into two parts.

Part I, consisting of ten chapters, indicates the nature of the contributions that have been made to various branches of chemistry through the application of radioactivity. Numerous illustrative examples from the literature are included and both the possibilities and the limitations of the various applications are pointed out. Part II, consisting of

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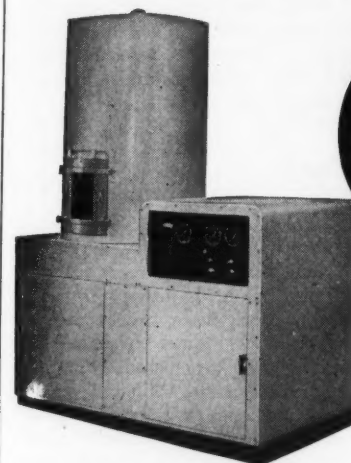
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When inquiring check CP 6613 on handy form, pgs. 2-3

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When inquiring check CP 6614 on handy form, pgs. 2-3

CHEMICAL PROCESSING

When inquiring check CP 6610 on handy form, pgs. 2-3

NEW LITERATURE

eighteen tables arranged according to subject, contains a summary of and a key to the literature concerning these applications. Most of the summary tables list data that are representative of information reported in designated publications. The order, subject matter, and numbers of the tables correspond to those of the chapters.

To obtain "Radioactivity Applied to Chemistry", remit \$7.50 direct to John Wiley & Sons, Inc., Dept. CP, 440 Fourth Ave., New York 16, N.Y. When inquiring specify CP 6615 on handy form, pages 2 and 3.

Discusses "packaged-power" type electrical systems

24-page bulletin outlines methods of obtaining electric power equipment for quick expansion at low cost and with conservation of critical materials. Explains how an electrical system may be assembled from a small number of standardized packaged units, thus eliminating the need for individually engineered assembly of separate components. Describes each package as being a complete, factory-assembled unit.

Photographs and diagrams cover: typical procedure used in calculating requirements, various installations and applications, flexible load-center design for future growth and changing loads, and the savings effected in copper consumption through use of high-voltage circuits. Bulletin GEA-5600 is issued by the General Electric Company, Dept. CP, Schenectady 5, N. Y. When inquiring specify CP 6616 on handy form, pages 2 and 3.

Cites deionizer use in producing mineral-free water

Quality of water produced by single-tank deionizer, as measured by specific resistance, is stressed in six-page bulletin. A table compares specific resistance measurements of water purified by deionization and by distillation. Technical sheet gives concentrations of 11 anions and cations in water having specific resistance above 1,000,000 ohms. Engineering data cover performance ratings of various size units, construction details, and availability of special equipment. Other information details operating principle of deionization units. Bulletin 512 is issued by Elgin Softener Corporation, Dept. CP, 134 N. Grove Ave., Elgin, Ill. When inquiring specify CP 6617 on handy form, pages 2 and 3.

Presents selection charts for rotary pumps

Eight-page, two-color bulletin details, along with accompanying photographs, two rotary type pumps featuring an external gear and a gear-in-head. Former type is recommended for non-lubricating liquids like gasoline, heavy tars, asphalts, acids and other services requiring independent lubrication of bearings and driving gears. Latter type is recommended for clear liquids having sufficient lubricating qualities to protect driving gears and bearings.

Shows cut-away drawings of both types and approximate dimensions. Two charts aid in selection of pump for pumping of liquids with viscosities of 300 to 1500 ssu at rates of 2 to 1000 gpm. Table gives pump size, rpm and then motor size recommended. Bulletin WQ-50 is issued by Warren Steam Pump Co., Inc., Dept. CP, Warren, Mass. When inquiring specify CP 6618 on handy form, pages 2 and 3.

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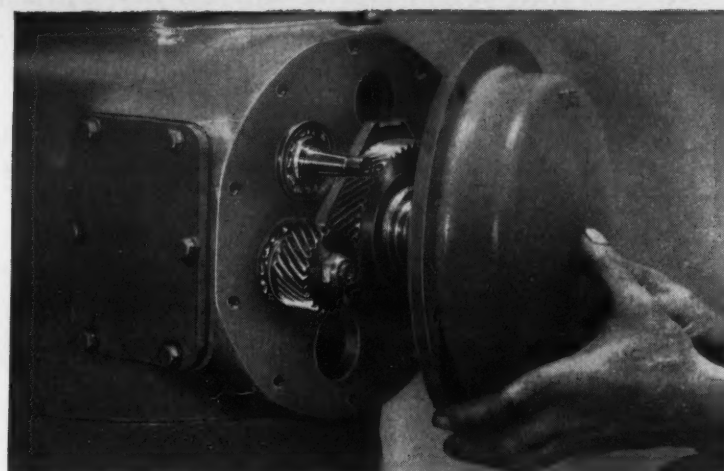
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When inquiring check CP 6619 on handy form, pgs. 2-3



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NEW LITERATURE

Uses and specifications of fish oils

Thirty-one oils and vehicles are described along with specifications and recommended uses of entire line, which include copolymers, non-drying, and miscellaneous oils; also, refrigerated, blown, and heat polymerized fish oils.

Bulletin points out uses of fish oils in flat paints, alkyl resins, rust-proofing compounds, wood preservatives, varnish, enamels, linoleum, oilcloth, printing inks, and calking compounds. Technical Bulletin No. 83 is issued by Archer-Daniels-Midland Co., Dept. CP, Box 839, Minneapolis 2, Minn. When inquiring specify CP 6620 on handy form, pages 2 and 3.

Data sheet describes pressure snubbers

Two-page sheet comments on feature of snubber consisting of a 3/8" diameter by 1/8" thick porous metal filter. Flow capacity of this element is adjusted to one of four classes of service — oils, water, gases and mercury manometers. The snubber is calibrated to give an equilibrium reading upscale or downscale in approx 10 sec.

Engineering data, for 1/4" NPT and 1/2" NPT sizes, cover maximum pressure ratings, housing dimensions, and pore size and permeability. Available in brass, monel or stainless steel, literature indicates applications as in damping pulsations, for metering, and for filtering small quantities of liquids or gases. "Micro Metallic Pressure Snubbers" is issued by Chemiquip Co., Dept. CP, 6 E. 97th St., New York 29, N. Y. When inquiring specify CP 6621 on handy form, pages 2 and 3.

Steel drafting tables are described

One-page, illustrated sheet specifies drafting tables available with one shallow reference and one tool drawer, with tool drawer only, or without drawers. All models have all-steel 4-post base, all-steel foot rest and 2 all-steel adjusting devices. Bulletin 208 is issued by Stacor Equipment Co., Dept. CP, 1887 Atlantic Ave., Brooklyn 33, N.Y. When inquiring specify CP 6622 on handy form, pages 2 and 3.

For more information on product at left, specify CP 6623 . . . see information request blank between pages 2-3.

NEW

Illustrations of effects

Six-p metal and mon ing c motiv salva oil of 40 News ing C When 2 and

Gasol feature

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Bulletin speed s each gi alloy t and de compos toughn reports tools a ing, an Recomm in rou terials grinding Bulletin State St 6627 on

NEW LITERATURE

Illustrates metallizing applications effecting maintenance savings

Six-page folder cites case histories wherein use of metallizing process resulted in longer wear of parts and equipment with consequent savings in time and money. Pictures and describes spraying and remachining of bus wheel hubs and crank shafts. Diesel locomotive pistons are shown in damaged state and after salvage operation. Tells of metallizing of rods from oil refinery installations with a saving in one year of 4000 lb of alloy steel and 2200 man-hours. Metco News, Vol. 5, No. 9, is issued by Metallizing Engineering Co., Inc., 38-14 30th St., Long Island City 1, N. Y. When inquiring specify CP 6624 on handy form, pages 2 and 3.

Gasoline-water trap featured in catalog

Illustrated 32-page catalog features a trap which will separate water from gasoline or other light liquid. This is one of a line of traps designed for steam, air and other uses. Variety of types and sizes include a steam trap which can be used at 1500 psi. Catalog 751 is issued by W. H. Nicholson & Co., Dept. CP, 12 Oregon St., Wilkes-Barre, Pa. When inquiring specify CP 6625 on handy form, pages 2 and 3.

Vibrating screen selection charts for 55 different materials

Descriptive material in 20-page bulletin includes graphs and tables on selection of vibrating screens for the dry screening of light or fine materials and the separation of solids from liquids. Types of materials covered in this analysis include gravel, coal, slag, gypsum, and sand among the dry materials; acetate slurry, fruit juices, rubber reclaimers, distillery slop, and soybean oil among the liquid.

A variety of installations are shown including sizing, scalping, recovering by-products from waste water, reclaiming oil well drilling mud, and reducing pollution of waterways by screening of waste waters. Drawings and specifications are given for a wide variety of screens, along with dimension tables of the woven wire screen cloths employed. Book 2377 is issued by Link-Belt Company, Dept. CP, 307 N. Michigan Ave., Chicago 1, Ill. When inquiring specify CP 6626 on handy form, pages 2 and 3.

Tabulates speeds and feeds of cutting tools

Bulletin describes working conditions under which high speed steels, cemented carbides and cast alloy cutting tools each give best performance. Lists seven advantages of cast alloy tools, which operate best at medium speeds, feeds and depths of cut. Listing of properties according to composition is given, along with comparative ratings of toughness, cutting quality and abrasion resistance. Also, reports on and illustrates forms and sizes of cast alloy tools available for turning, facing, milling, boring, reaming, and other operations.

Recommended feeds and speeds for use of cast alloy steel in roughing and finishing cuts on a wide variety of materials is given in tabulated form. Gives instruction on grinding of tool bits and blades of cast alloy material. Bulletin 101 is issued by Crobalt, Inc., Dept. CP, 2800 S. State St., Ann Arbor, Mich. When inquiring specify CP 6627 on handy form, pages 2 and 3.

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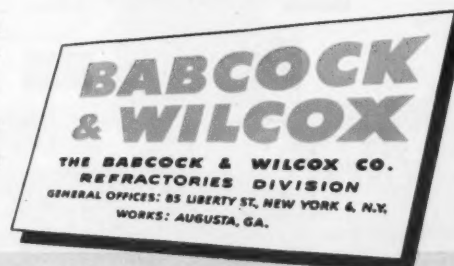
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When inquiring check CP 6628 on handy form, pgs. 2-3

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When inquiring check CP 6629 on handy form, pgs. 2-3

NEW LITERATURE

Specifies 16 models of vertical pumps

Eight-page, two-color publication outlines vertical turbine pumps. These pumps are recommended for use where intake suction is connected to an open source. Typical applications include liquid transfer, cooling towers, and dewatering. Types shown have capacities ranging to 15,000 gpm and pressures to 250 psi.

Illustrations show installations, constructions and dimensions. Specifications are given for 16 models. Form 7228 is issued by Ingersoll-Rand Company, Dept. CP, 11 Broadway, New York 4, N. Y. When inquiring specify CP 6630 on handy form, pages 2 and 3.

Tells how to install glass block

Two-color, 16-page book explains and shows, with photographs and drawings, how glass block can be installed to replace worn-out windows. Advantages cited include greater effective lighting area, lower fuel costs due to the better insulating properties of the block compared with conventional windows, and low maintenance costs.

Many tables of dimensions, detail drawings, and "how to do it" picture sequences show methods for many types of windows. Booklet points out that many plants, factories and offices are either being designed to use glass block when built, or are switching to it instead of repairing worn windows. "Insulux Glass Block" is issued by American Structural Products Co., Dept. CP, Toledo 1, Ohio. When inquiring specify CP 6631 on handy form, pages 2 and 3.

Air driven lab stirrer featured in bulletin

Six-page bulletin features a 1/6 hp air powered, explosion-proof, lab mixer which delivers high power due to the fact that it is geared down 10 to 1. This is one of fifteen stirrers and mixers pictured. In addition to lab types, the bulletin describes and illustrates direct drive, geared, side entering, flange-mounted and other industrial models. All portable models are equipped with a ball and socket clamp which permits easy and proper positioning of the propeller shaft.

Bulletin 100 is issued by Grenier & Co. Inc., Dept. CP, P. O. Box 417, Palos Heights, Ill. When inquiring specify CP 6632 on handy form, pages 2 and 3

If a TRUCK DRYER is Suitable for Your Product...

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"National" Truck Dryers are being used successfully for chemicals, pharmaceuticals, ceramics, cosmetics, minerals, rayon, rayon cakes, tobacco, a variety of food products and small metal or mechanical parts. They are designed for either batch or continuous drying, with various methods of air circulation. Patented "Add-a-Unit" construction facilitates installation and provides for economical future expansion. The booklet gives complete details.

Chemical Dryers of All Types and Sizes



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When inquiring check CP 6633 on handy form, pgs. 2-3

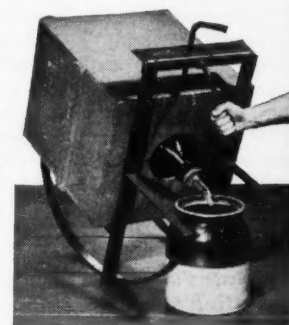
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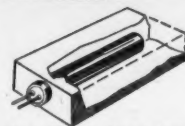


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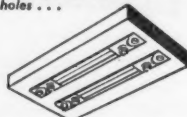
When inquiring check CP 6634 on handy form, pgs. 2-3

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Put surface heat *where* you want it, *when* you want it, and in the *amount* you want it with G-E Calrod heaters. Calrod heaters are available for clamping on surfaces, inserting into drilled holes, casting into metal, locating in grooves, wrapping around cylinders and spacing away from surfaces. And they come in a wide enough range of sizes, ratings, and sheath materials to meet almost every conceivable heating requirement.



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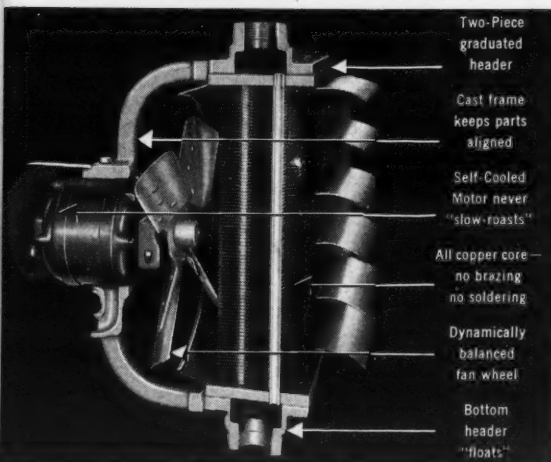
FOR NEW FREE CATALOG, GEC-1005A and application bulletin GEA-5097, "Heating Surfaces," write on your letterhead to: Section 720-17, Apparatus Dept., General Electric Co., Schenectady 5, New York.

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GENERAL ELECTRIC

When inquiring check CP 6635 on handy form, pgs. 2-3

ONLY ILG UNIT HEATERS offer you ALL these advantages!



Send inquiry card or phone nearby Branch Office (consult classified directory) for complete specifications on the finest units heaters you can install. *Save with ILG!* Ilg Electric Ventilating Co., 2813 N. Crawford Ave., Chicago 41, Ill. Offices in more than 40 Principal Cities.



When inquiring check CP 6636 on handy form, pgs. 2-3

NEW LITERATURE

Illustrates carton sealing to meet government specs

Step-by-step instructions for sealing V3 and W cartons with tape to meet government specifications are illustrated in a new wall chart. The chart gives 10 steps for sealing a carton's inner liner and outer seams, and for covering and protecting carton labels with waterproof acetate fiber tape.

Features and physical properties for the tape are shown on the back of the chart. Chart can be taped to walls or to the surface of work tables or benches for handy reference. "How to Seal V3 and W Cartons" is issued by Minnesota Mining & Manufacturing Co., Dept. CP, 900 Fauquier St., St. Paul 6, Minn. When inquiring specify CP 6637 on handy form, pages 2 and 3.

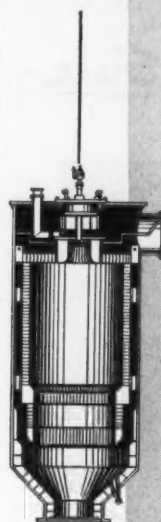
Features labeler capable of 75 to 150 units/min

Four-page bulletin shows and gives specifications of labeling machine that is adjustable for all shapes and sizes of containers. Indicates that unit handles containers from fractional ounce to gallons, and label sizes from "postage stamp" to 5" x 6". Photographs demonstrate various phases of machine's operation.

Calls attention to fact that labeler requires no operators and functions in conjunction with any semi-automatic or fully automatic packaging line. "MRM Labeling Machines" is issued by MRM Company, Inc., Dept. CP, 191 Berry St., Brooklyn 11, N. Y. When inquiring specify CP 6638 on handy form, pages 2 and 3.

Describes medium duty chemical pump

Four-page, two-color bulletin describes, illustrates and specifies manufacturer's type G pump design for process and medium duty chemical services. A dynamically balanced, open-type impeller is used and is available in a variety of metals, as are the other parts. The unit is recommended for filterpress service, condensate return and low pressure boiler feed service, handling slurries, and handling liquids with suspended solids. Bulletin WQ-213 is issued by Warren Steam Pump Company, Inc., Dept. CP, Warren, Mass. When inquiring specify CP 6639 on handy form, pages 2 and 3.



ONE CUSTOMER duplicated an installation 21 times

He *knows* Peabody direct fired air heaters are good!

One of many Peabody customers has actually put in 21 duplicate spray drying installations of Peabody Direct Fired Air Heaters in their various plants throughout the country. With a total installed capacity of more than 400,000,000 BTU/hr. this customer knows what these units can do in process and product refinements!

If your problem or process lends itself to the use of pressure firing to get better processing or profits, look to Peabody for custom-engineered solutions that fit your particular specifications. No obligation.

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763

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When inquiring check CP 6640 on handy form, pgs. 2-3

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lower cost, more volume—

Specify *** Precision** to be Sure



PRECISION-THELCO Cabinet Line saves considerably on low original cost and long service. Quick, thorough controlled-temperature; larger interior; welded construction; safety catch; non-char asbestos door-seal; baked enamel finish; selection to suit every purpose. Ideal for the limited budget. Bulletin 8-376

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When inquiring check CP 6641 on handy form, pgs. 2-3

NEW LITERATURE

Conveyors at work

Sixteen-page catalog on roller conveyors features many pictures of actual installations. Data and diagrams are given, and wheel type conveyors are explained. Catalog 60 is issued by Dept. 9, The E. W. Buschman Company, Dept. CP, Clifton & Spring Grove Aves., Cincinnati 32, Ohio. When inquiring specify CP 6642 on handy form, pages 2 and 3.

Comments on purifiers for gases and vapors

Four-page bulletin illustrates and describes functions of nine types of purifiers for entrainment separation from air, steam and gas in the power generation, petroleum refining, and chemical processing fields. Applications include upflow and downflow purifiers for processing vessels and purifiers for lines up to 12" and pressures to 600 psi. Bulletin also reports on design feature of the purifiers which employs centrifugal and centripetal forces that will deliver steam of 99.9% quality without moving parts or mechanical filters. Bulletin G-51 is issued by The Centrifix Corporation, Dept. CP, 3608 Payne Ave., Cleveland 14, Ohio. When inquiring specify CP 6643 on handy form, pages 2 and 3.

Catalog of chemicals for laboratory

Comprehensive 256-page catalog lists company's complete line of laboratory chemicals. Contains the latest specifications of the reagents, along with the most recent prices. Prefacing photo-section demonstrates the necessary steps in the process of manufacture of the chemicals. Helpful tables for the chemist's use are also provided in the appendix. "Specification Catalog" is issued on letterhead request to Dept. 30, J.T. Baker Chemical Co., Dept. CP, Phillipsburg, N.J.

Announces new chemicals and price changes

12-page supplement lists 77 new chemicals, along with molecular weights, structural formulas, and melting or boiling ranges for many of the chemicals. In addition, price changes of 10% (to the nearest five cents) are announced for some 424 chemicals. Supplement 37-3 is available on request to Distillation Products Industries, Eastman Kodak Co., Dept. CP, Rochester 3, N. Y. When inquiring specify CP 6644 on handy form, pages 2 and 3.

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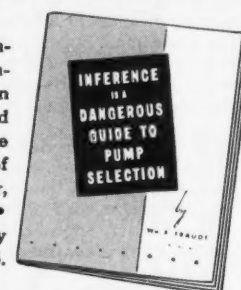
BASIC FACTS about PUMPS

BULLETIN S-146 AVAILABLE

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Fault-filled enthusiasms for certain types of pumps now running rampant in industry, are dangerous. Because a type of pump performs sensationally on somebody else's job, it isn't necessarily certified for your use.

The unbiased, basic facts concerning types of pumps are contained in our special Bulletin S-146. Big illustrations and brief descriptions deal with the capacities and adaptability of such types as piston, plunger, rotary and centrifugal pumps. • Please use business stationery when writing for Bulletin S-146.

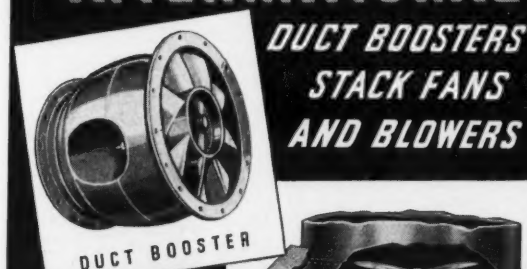


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TABER PUMPS

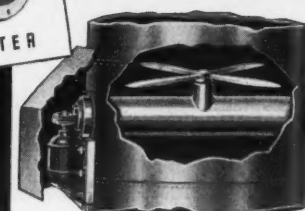
When inquiring check CP 6645 on handy form, pgs. 2-3

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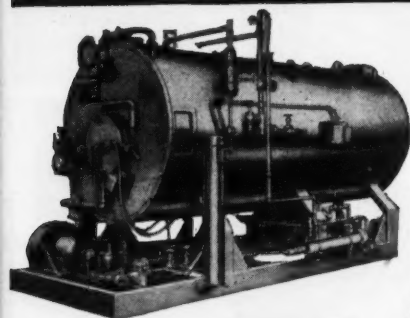
Bulletin 130 gives rating tables, dimensions and other data you need in selecting the right sizes in standard worm-gear speed reducers. Ask for your copy.

New bulletins on other types of Cleveland worm gear drives and worm-gear sets also available. Outline your needs. The Cleveland Worm & Gear Co., 3257 E. 80th St., Cleveland 4, Ohio.

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SEPTEMBER, 1951

NEW LITERATURE

Instruments covered in basic course

This 7-3/4 x 10", 232-page book furnishes a background of technical information which is basic for a complete understanding of pressure and temperature instruments. It is, in itself, a basic course in principles, constructions and applications of instruments. It also clearly defines the quantities to be measured.

Coverage is split into two main sections. Both deal with physical and chemical laws affecting pressure and temperature measuring and recording instruments. The latter portion of each section deals with the operation and application of instruments and accessories for controlling manufacturing processes. Starting with fundamental concepts, the first section progresses from sample topics like heat transfer, expansion of gases and pressure units to fairly detailed subjects like liquid and gas filled tube systems, potentiometric pyrometers, and the use of differential pressure in liquid level measurement. All of the first section is concerned with explaining this basic information.

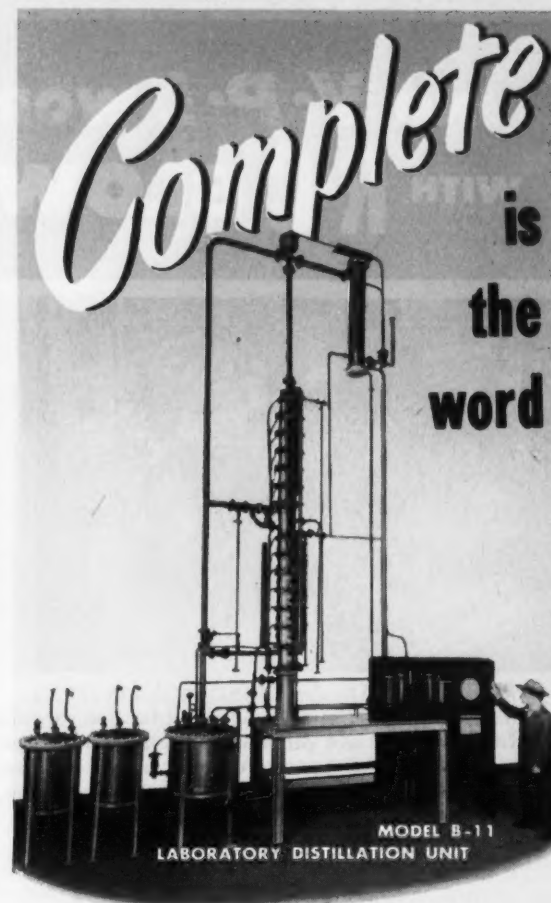
The second section, on the other hand, is arranged in the form of a laboratory manual. Each topic sets out to show or prove something. A list of needed materials is given, and followed by directions for performing the experiment. A short set of questions after the experiment suggests the point. Laboratory section starts with conductivity of liquids and metals, convection, thermal expansion, etc., and proceeds to practical applications illustrated by topics like servicing a Bourdon gauge, testing thermometer accuracy, and measuring temperature with a thermocouple.

Text is clear and concise. It is illustrated by 215 drawings and halftones. Subject matter is well tied-in with the instruments which are commercially available. To obtain "Fundamentals of Pressure and Temperature Instruments," remit \$3.45 direct to Delmar Publishers Incorporated, Dept. CP, Albany 1, N. Y. When inquiring specify CP 6649 on handy form, pages 2 and 3.

Application of instruments shown in detail

Taking up where the above mentioned basic course ends, this volume describes basic control theory, methods and mechanisms for obtaining basic control effects. The function of each device is pointedly illustrated, and installation, adjusting, and checking procedures are given for several process industries.

The 223 pages of the book start with types of unit processes and the general requirements for control. After the basic control theory has been developed, subject matter goes on to relate several instruments and instrument types to this theory. A final portion of the work covers the application of instruments to fractionating columns, heat exchangers, air conditioning equipment, etc. In these cases the material is sufficiently detailed to touch points like the location of controlled valves, control settings needed in special cases, and best locations for elements. In addition to the text, a glossary is given. There is also a section which considers advanced control theory mathematically. Although this treatment does involve calculus, the explanations accompanying the derivations help considerably to keep it understandable and useful. The work is illustrated with 198 drawings and halftones covering all the phases of the text. To obtain "Instruments and Process Control," remit \$3.45 direct to Delmar Publishers Incorporated, Dept. CP, Albany 1, N. Y. When inquiring specify CP 6650 on handy form, pages 2 and 3.



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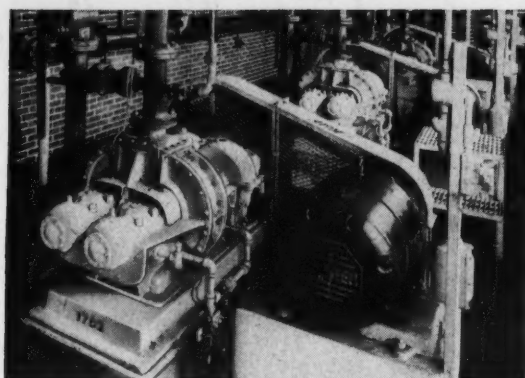
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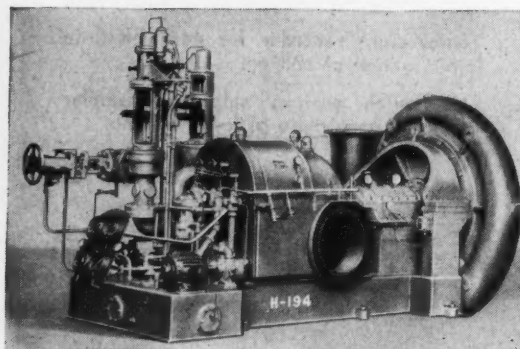
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Type OIB Gas Exhauster. Capacity 19,000 cfm, driven by 332 hp steam turbine.

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When inquiring check CP 6652 on handy form, pgs. 2-3

NEW LITERATURE

Presents internal type purifier for low solid steam

Four-page, two-color bulletin reports on internal type purifier designed to remove virtually 100% entrainment. Contains dimensional drawings illustrating use inside two typical installations: steam drums and bubble-cap towers. Also has cut-away drawing showing flow of vapor through unit, a table of dimensions, specifications and a description of the operation of the unit. Condensed Bulletin 100 is issued by Steam Specialty Div., V. D. Anderson Co., Dept. CP, 1935 W. 96th St., Cleveland 2, Ohio. When inquiring specify CP 6653 on handy form, pages 2 and 3.

Presents centrifugal pumps of vertical type

Eight-page bulletin points out availability of vertical sump pumps in wet and dry pit types and in 1½ to 8" sizes; capacities to 2000 gpm and heads to 120 feet. Shows external and sectional views of two types pumps: one recommended for handling liquids containing practically no solids; other suited to general drainage service both for clear liquids and other liquids containing solids. Covers general construction details of pumps and designs and materials used for impellers. Bulletin WQ-220 is issued by Warren Steam Pump Co., Inc., Dept. CP, Warren, Mass. When inquiring specify CP 6654 on handy form, pages 2 and 3.

Shows split wheel design in forced draft fans

Eight-page bulletin describes features of forced draft fans which on the double wheel models use a split wheel. Design employs a wide space between wheels instead of conventional common disc. Also illustrates various types of fan-wheels and housings. Bulletin 300 is issued by The Thermix Corp., Dept. CP, Greenwich, Conn. When inquiring specify CP 6655 on handy form, pages 2 and 3.

Catalog shows line of markers

Markers, marking equipment and type are shown in 20-page catalog. Units include manual, semi-automatic and automatic printers of various designs. Several type faces are offered for use with this equipment. "Marking Equipment for Industry" is issued on letterhead request to The Industrial Marking Equipment Co. Inc., Dept. CP, 454 Baltic St., Brooklyn 17, N.Y.



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TO VARIABLE
PRESSURE

When inquiring check CP 6657 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Detects liquid level changes using displacement system

Four-page, illustrated publication describes and specifies a displacement type liquid level transmitter. Stainless steel displacer acting through a lever system and damping bellows arrangement, gives high sensitivity to level change without being greatly affected by short duration disturbances. Transmitter is used with standard pneumatic instruments, and is recommended for use with proportional controllers in continuous operations.

Nine ranges covering displacements from 0 to 120" are available and operate at pressures up to 300 or 600 psi. Liquids in the specific gravity range from 0.3 to 2.0 can be handled. Specification Sheet 417-1 is issued by Brown Instruments Div., Minneapolis-Honeywell Regulator Company, Dept. CP, Station 40, Wayne and Windrim Aves., Philadelphia 44, Pa. When inquiring specify CP 6658 on handy form, pages 2 and 3.

Considers use and conservation of industrial wastes

The purpose of this book is to give the reader an acquaintance with the principal scrap and waste materials that are produced and used by industries. In 317 pages it covers sources of supply, producers, markets, and how waste materials are handled to become usable products of industry once more. The volume is semi-technical and is not intended as a scientific work on the utilization of scrap and waste materials. It will be most useful to industrial plant executives, superintendents, research workers and others interested in finding markets for their waste, etc.

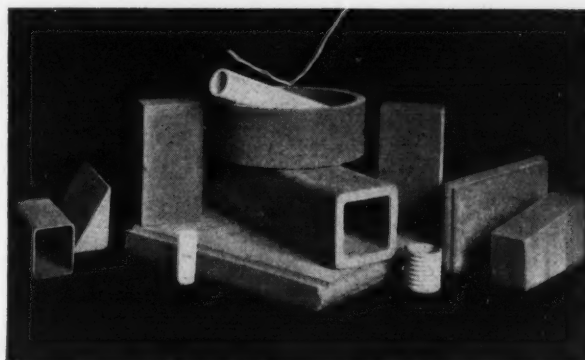
While coverage within any subject is not too extensive, main outlines of almost all industrial waste products are covered. These range from obvious examples like plastic, ferrous and many non-ferrous scraps, wood wastes and fuels, and textile wastes, to methods and procedures for gold, platinum and other precious metal reclamation. Also included are the projects of chemical industries of which viscose rayon, brewery, and the solvents industry are typical. While this work suggests some potential uses for materials unused at present, it is quick to point out that much research is needed to develop these potential markets. It also stresses the growing need for complete utilization of our resources, if we are to continue to have economically healthy industry. To obtain "Industrial Wastes" remit \$5.00 direct to Atlas Publishing Co., Dept. CP, 425 W. 25th St., New York 1, N. Y. When inquiring specify CP 6659 on handy form, pages 2 and 3.

Describes 5-million gpm pumping system

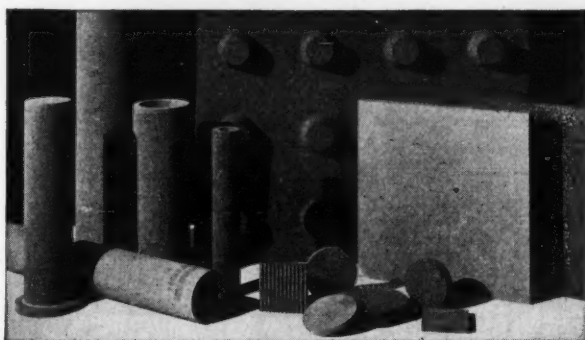
Two-color, 24-page publication contains seven articles, numerous graphs, data, and illustrations. Material is entirely concerned with pumping and pump motors. Feature article describes the storm water pumping system used in Detroit. Three pumping stations there have a combined capacity of nearly 5,000,000 gpm. Further articles deal with application of AC motors to centrifugal pumping, data and explanation of part winding starting for high hp motors, water handling in the oil industry, and methods of insulation maintenance for large installations.

Supplementing the articles on synchronous motor controls, booklet contains explanations of manufacturer's polarized field-frequency control. "Synchronizer" 33 is issued by Electric Machinery Mfg. Company, Dept. CP, Minneapolis, Minn. When inquiring specify CP 6660 on handy form, pages 2 and 3.

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One Cu Ft of Brazed Aluminum Heat Exchanger Holds up to 450 Sq Ft of Total Surface

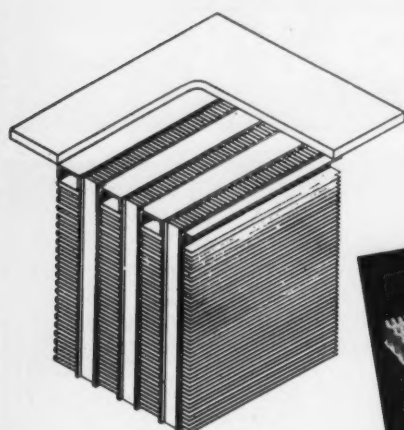


Fig. 1 — Drawing of cross-flow heat exchanger section

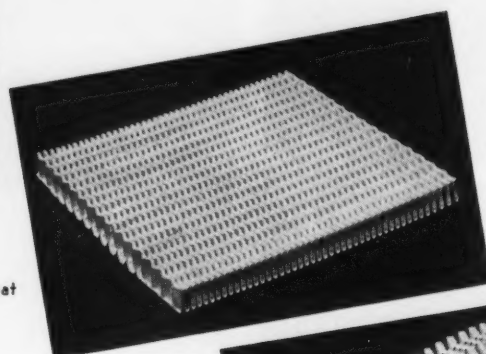


Fig. 2 — Herringbone fin

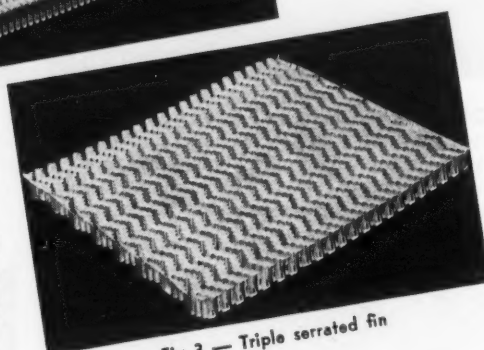


Fig. 3 — Triple serrated fin

USES: Suitable for heat exchange between gas and gas, liquid and gas, and liquid and liquid. So far, application has been centered largely in tonnage oxygen plants, but exchangers are now being designed and built for other uses. Still another application, actually on stream now, is in a plant producing argon. Other uses include cooling compressed gases.

Features: The three main advantages of these brazed aluminum heat exchangers over conventional shell-and-tube types are 1) compactness, 2) less weight, and 3) lower cost. Another advantage is the flexibility in design. Flow passages can be varied in height and width, corrugations can be varied in type arrangement and number, and complete units can be built to handle many different streams of gas or liquid. Streams may flow across each other, parallel to each other or in opposite directions, and

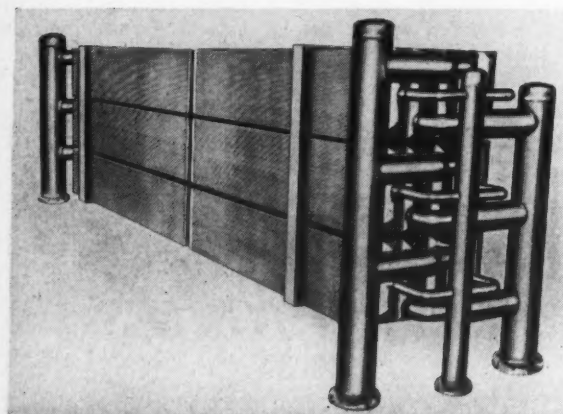


Fig. 4 — Batteries of heat exchanger sections like this have been fabricated with over 90,000 sq ft of surface

Lightweight units reported to cost 1/3 to 1/2 as much as conventional shell-and-tube types, offer designer great flexibility

EQUIVALENT EXTERNAL SURFACE PER CUBIC FOOT VOLUME

Brazed Aluminum Heat Exchangers		Shell & Tube Heat Exchangers	
Application	Sq. Ft./Cu. Ft.	Tube Size	Sq. Ft./Cu. Ft.
Gas to Gas	125 to 225	3/4"	25 to 35
Liquid to Liquid	80 to 100	5/8"	30 to 40
		1/2"	35 to 50
		1/4"	85 to 100

may be taken off at any point along the length of the exchanger. This fundamental flexibility permits engineers to work out almost any combination of circuits, temperature drop and pressure drop for particular processes.

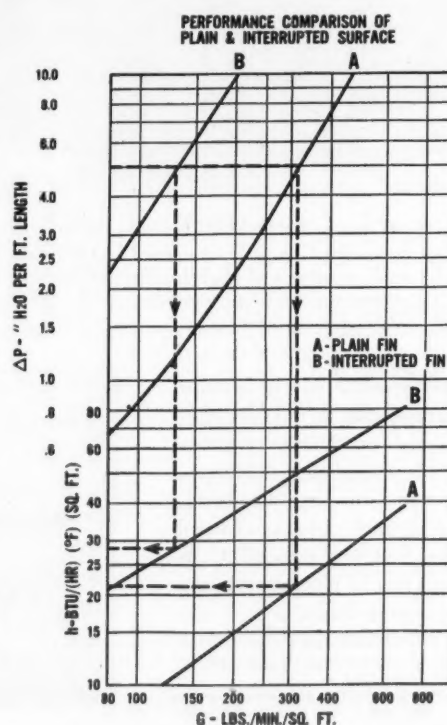
Contrary to the opinion of many engineers, this type of exchanger is suitable for relatively high pressure work. Units have been successfully tested at 150 psi with temperatures up to 600°F, and 1000 psi with temperature of 200°F. Production units are in operation today that must undergo constant

Heat Exchange and Pressure Drop Characteristics

Extensive tests have shown that the plain fin type of brazed aluminum heat exchanger compares closely in pressure drop characteristics with the round tube, and they can be considered as a class. On the other hand, interrupted surface fins such as the serrated and herringbone types are comparable and can be considered as a separate class.

Because the friction factor (at equal Reynolds numbers) of the interrupted surface type is so much higher than that of the uninterrupted type, the latter is preferable in all applications. However, another approach to judging comparative performance should be considered. This approach is based on equal pressure drops through the two types, assuming the same hydraulic diameters and fluid characteristics.

The example on the chart shows that for a pressure drop of 5" water per foot of length the heat transfer coefficient for the interrupted surface is approximately 30% higher than for the plain, uninterrupted surface. On an overall basis it may be more economical to use an interrupted surface.



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reversals of pressure amounting to 100 psi while the walls exchange heat between gases at temperatures ranging from 80°F (room temperature) to -300°F. Test cores have withstood more than two million reversals under these conditions. Many cross-flow units are in operation with one gas entering at 500°F and the other at 0°F.

Description: Sections are built up with layers of corrugated aluminum separated by flat aluminum plates. Figure 1 shows a section of a cross-flow exchanger with straight fins. Here, flow of the two fluids would be perpendicular to each other. While straight fins are shown here, this design can be varied. Figures 2 and 3 show examples of other types.

Design possibilities

Wide latitude in design is possible with this type of exchanger because of the choice offered in these various fin shapes, plus the possibility of varying the number of fins per inch, and varying the fin height during fabrication. Then too, exchangers can be made that use one fin size and design for one fluid, another size and design for the second fluid, and so on.

Exchangers are made by dipping the assembled core into a molten flux bath, thus accomplishing brazing together of the parts. The aluminum sheet used is actually a duplex sheet consisting of a pure aluminum core with a coating of brazing material on either one side or on both sides. The usual brazing material is about 92½% aluminum and 7½% silicon, the latter being used to lower the melting point of the material so brazing can be accomplished without melting the pure aluminum core.

Brazed joints are at least equal in strength to that of the aluminum core material, and are usually stronger due to the formation of fillets. Corrosion resistance of the joints appears to be comparable to that of welded joints, according to tests.

Large types

Larger types of exchangers can pack as much as 450 sq ft of total surface in a cu ft of volume—up to nine times the surface of a comparable conventional shell-and-tube exchanger with ¾" tubes. Total surface is not to be confused with external tube surface. The latter is the surface exposed to one of two streams, and is used as a basis for the table accompanying this article. It is apparent that it would be necessary to go to a very small tube diameter in order to approach the amount of external surface per cubic foot that can be furnished in a brazed aluminum heat exchanger.

Estimates are that the cost of the brazed aluminum heat exchanger is one third to one half the cost of the least expensive shell-and-tube types. Shipping and erection costs are also less because of the compactness and light weight.

Applications

This type of exchanger should be considered only for applications suitable to use of aluminum, or those in which any scale formations, etc., can be removed by chemical cleaning methods. The exchangers are not adaptable to mechanical cleaning methods.

Methods are being worked out for fabrication with stainless steel and Inconel. Use of these materials will, of course, widen the field of application of this type exchanger.

Source: The Trane Company, Dept. CP, LaCrosse, Wis. . . . or for more information check CP 6662 on handy form, pages 2 and 3.

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It takes select clays to meet Lapp specifications for plasticity, impurity content, acidity and other important properties. Every carload of clay is laboratory tested at Lapp before use.



Lapp Vacuum Process removes all air, in bubbles and in solution, from liquid clay slip, assures against voids, laminations or blebs.



Two continuous tunnel kilns fire Lapp ware, over a 4½ day heating, soaking and cooling cycle. Temperatures exceeding 2350° F. are precisely controlled to assure complete vitrification.

It takes more than the word "porcelain" to describe a material of the chemical stability, purity, resistance to corrosion, absolute freedom from porosity, cleanability and high mechanical strength . . . of Lapp Chemical Porcelain.

NO LIQUID PENETRATES Unlike other so-called "porcelains," Lapp porcelain is completely vitrified . . . a dense, pure, homogeneous body, without blebs or voids. With or without glaze, it is unaffected by all acids except hydrofluoric, relatively resistant to alkalis. It permits accurate grinding and polishing for perfectly finished joints or seating surfaces.

MECHANICALLY TOUGH, LONG-LIVING Non-porosity of Lapp porcelain is the chief factor in its long life. Routine dye tests attempt to force dye into unglazed body at pressure of 100,000 lbs. per square inch, without the slightest trace of penetration even though continued for unlimited time. Glassy-smooth glaze actually imparts extra mechanical strength and heat shock resistance. The body itself is highly resistant to corrosion and abrasion. Being non-porous, no capillary pressures can be built up within. For most applications Lapp Porcelain continues to serve indefinitely with exactly the same efficiency as the day on which it was installed.

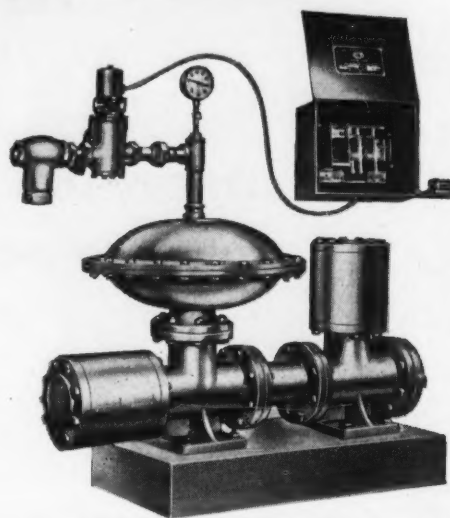
Write for Bulletin 244 for complete description and specifications of Lapp Chemical Porcelain. Lapp Insulator Co., Inc., Process Equipment Division, 490 Maple St., LeRoy, N.Y.

Lapp *Process Equipment*

When inquiring check CP 6663 on handy form, pgs. 2-3

ODS

DIAPHRAGM PUMP



Announcing the 4 inch size!

THIS PUMP, recommended for handling clear chemical solutions as well as many different slurries, has a design capacity of 100 gpm (based on water) and is capable of operating against heads up to 200 feet. Feed sources can range up to 15 feet below the pump.

As with the smaller ODS Pumps, certain structural features are outstanding: (a) no linkage to the diaphragm which is a solid unpunched, unslotted, piece of flexible rubber or neoprene; (b) no stuffing

box or high speed moving parts. Three different types of valves are available: ball, flap or diaphragm.

Bulletin 309-R will give you full details of the full line of ODS Pumps which come in the following sizes: 1 1/2, 1 1/2 A, 2, 2B, 3 and 4 inch. We have the Olivite Acid-Handling Centrifugal Pump in several sizes which might be better than our ODS Pump for your requirements, particularly if they involve highly corrosive solutions.

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Orillia, Ontario

MEXICO & CENT. AMERICA
Oliver United Filters Inc.
Oakland, Calif.

INDIA
Dorr-Oliver (India) Ltd., Bombay

EUROPE & NORTH AFRICA
Dorr-Oliver S. A. Brussels
Dorr-Oliver S.N.a.R.L. Paris

Dorr g.m.b.h. Wiesbaden (16)
Dorr-Oliver Co., Ltd., London, S.W. 1
Dorr-Oliver S.a.R.L. Milano
Dorr-Oliver, N.V. Amsterdam-C

PHILIPPINE ISLANDS
E. J. Nell Co.
Manila

HAWAIIAN ISLANDS
Honolulu
A. R. Duval

WEST INDIES
Wm. A. Powe Havana

SOUTH AMERICA & ASIA
The Dorr Co., New York

AUSTRALIA
Hobart Duff Pty., Ltd.
Melbourne

SOUTH AFRICA
E. L. Bateman
Johannesburg, Transvaal

When inquiring check CP 6664 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

175 to 350 pounds of water produced for each pound of fuel consumed . . .

by recycling latent heat of evaporation, compression stills allow economies in power consumption

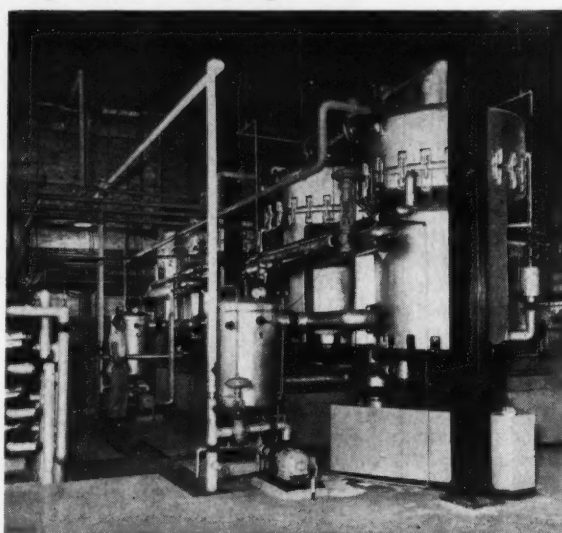
Uses: Compression stills have three distinct and separate major applications:

Water production in quantity and quality. Potable water can be produced from brackish or sea water, eliminating need for trucking or piping facilities from a remote fresh water source. Where potable water is already available but processing requirements demand chemically pure water, stills provide a USP chemically pure, pyrogen-free water.

Concentration for the recovery of valuable solids or products in dilute form. In addition to recovering normally lost products from waste fluids, compression evaporation can effect considerable savings in distribution and packaging costs by concentrating the product.

Concentration for the disposal of voluminous or injurious wastes. Distillation is effective wherever materials cannot be disposed of in local sewer systems, or where stream pollution ordinances prohibit such disposal.

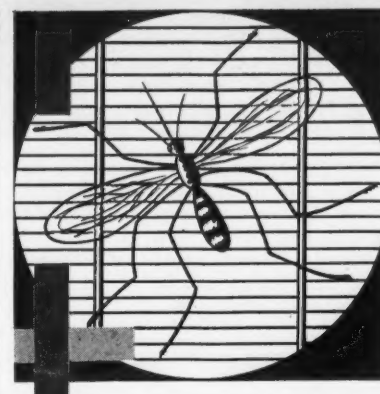
Features: Economy of operation. Compression stills, depending on the size and other factors, produce from 175 to 350 pounds of water for every pound of fuel burned. By comparison, standard single-effect stills produce about 13 pounds of water per pound of fuel. With electric-



Photograph shows the largest single compression distillation plant in the US. Compression equipment has been in successful use for several years here

powered compression stills, pure water can be obtained with a power consumption of 60 kwh/1000 gal. Diesel-powered units produce 1000 gal with fuel consumption as low as 50 gal. Similar low costs of operation can be secured with steam turbines, natural gas powered, or gasoline-powered engines.

Description: Responsible for these economies of operation is the recycling of latent heat of evaporation. To start the cycle, an auxiliary heat source is generally provided through either a direct steam supply, internal combustion engine heat, or directly applied immersion heaters. When the original supply of raw liquid has reached the



Better screening with BEE-ZEE round rod screens

Better screening may be a means of greater profit on your sizing or deliquifying operations. Let Bee-Zee Screens give greater efficiency to your screening equipment than you believed possible!

ROUND TOP RODS



means that screens can wear halfway through before screen opening changes—giving you constant accuracy for the long life of Bee-Zee Screens.

FINE POINT OF CONTACT



between round top and tie rods forms no "pockets" to cause blinding or clogging. This means faster deliquifying, too.

WELDED STEEL CONSTRUCTION



gives Bee-Zee Screens built-in tension to absorb stress and strain. Stainless steel rods resist rust, corrosion and chemical action— are easy to keep clean.



Write for free catalog explaining money-making features of Bee-Zee Screens and their use in chemical processing work. No cost or obligation. Send today!

BIXBY-ZIMMER
ENGINEERING COMPANY

Bee-Zee Screens can be fitted to any chemical processing equipment.
790 ABINGDON ST. GALESBURG, ILL.

When inquiring check CP 6665 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Wherever
it's

HOT
specify
Sicon

NEW
IMPROVED
SILICONE-BASE
HEAT-RESISTANT
FINISH

Protects Stewart Warner's
New Saf-Aire Wall Furnace



Quality finish specifications for this heating unit called for a coating that would stand 500° and still retain its color and gloss—a temperature far above that incurred in normal operation. Ordinary heat resistant coatings failed. SICON Ivory and SICON Beige worked perfectly...just as SICON has solved so many other finish problems. Write for dynamic proof of SICON'S amazing stability under heat! New Brochure now ready.

Sicon
Silicone-Base Finish is
manufactured exclusively by
MIDLAND
INDUSTRIAL FINISHES CO.
Waukegan, Illinois
ENAMELS • SYNTHETICS
LACQUERS • VARNISHES

When inquiring check CP 6666
on handy form, pgs. 2-3

PROCESSING EQUIPMENT

boiling point, using this auxiliary heat, the compressor is started.

Vapor rises from the boiling raw liquid into vapor head through steam separator where entrained particles are removed. Vapor is then drawn into compressor, where heat is applied by mechanical means to increase pressure and temperature by a relative amount. Next, vapor is forced into lower section of evaporator and across the outside surfaces of the tubes containing the boiling raw liquid. Coming in contact with the raw liquid through the tube medium, vapor transfers its latent heat of evaporation.

Thus the vapor condenses to boiling distillate and drops to the tube sheet where it is carried off as pure distillate. At the same time, a new supply of vapor has been produced in the tubes which rises to vapor head to continue recycling.

Source: Compression stills are made by Cleaver-Brooks Co., Dept. CP, 326 E. Keefe Ave., Milwaukee 12, Wis. . . . or for more information check CP 6667 on handy form, pages 2 and 3.

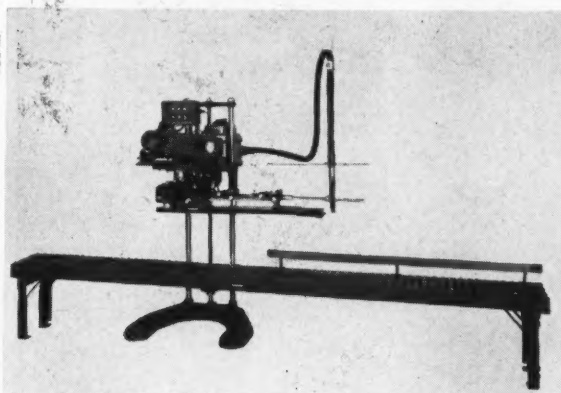
Pre-heating and air extraction aid sealing of large packages in polyethylene wraps . . .

rotary sealing machine also includes conveyor; operates continuously with little handling

Uses: Conveying and sealing large, heavy packages in polyethylene. Useful in handling government orders which quite often call for this type of packaging.

Features: Minimum of handling is involved in maintaining a steady flow of sealed bags. Special 16" closed top preheater conditions polyethylene before entering into sealing mechanism permitting high sealing speeds.

Description: Rapid height adjustment of sealing mechanism makes machine serviceable in handling different



Seals large packages in polyethylene

height packages successively. Dimensions of machine . . . 62" height, 33" width, and 54" length.

Roller bed conveyor, equipped with adjustable legs, is supplied in 6" or 9" widths and any desired lengths. Air extractor removes all air from bag and aids in securing a neat, compact package.

Sealing speeds range from 150 to 550 lineal inches per minute.

Source: Model D sealing machine is built by Amsco Packaging Machinery Co., Inc., Dept. CP, 31-31 48th Ave., Long Island City 1, N. Y. . . . or for more information check CP 6668 on handy form, pages 2 and 3.

OLIVITE
Acid-Handling
PUMP

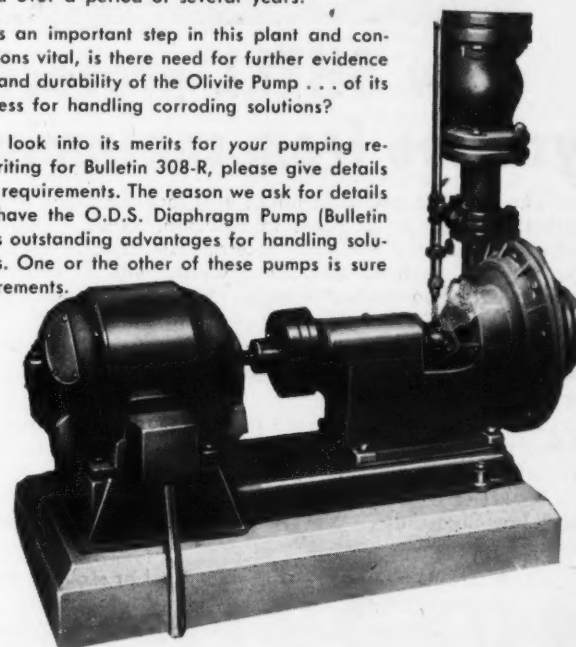
Approved to the Extent
of Over 100 Pumps in One Plant

HERE, in the east there's a large chemical plant with extensive acid pumping operations. Not only is the total volume handled very large but several different solutions, both hot and cold, are involved.

In this one plant there are over 100 Olivite Acid Handling Pumps . . . with purchases spread over a period of several years!

Since pumping is an important step in this plant and continuity of operations vital, is there need for further evidence of the efficiency and durability of the Olivite Pump . . . of its practical usefulness for handling corroding solutions?

We suggest you look into its merits for your pumping requirements. In writing for Bulletin 308-R, please give details of your pumping requirements. The reason we ask for details is that we also have the O.D.S. Diaphragm Pump (Bulletin 309-R) which has outstanding advantages for handling solutions and slurries. One or the other of these pumps is sure to fit your requirements.



New York 18 — 33 W. 42nd St. Chicago 1 — 221 N. LaSalle St.
Oakland 1 — 2900 Glascok St. San Francisco 11 — 260 Calif. St.
Export Sales Office — New York • Cable — OLIVINFIL

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Hazleton, Pa.
Oakland, Calif.

OLIVER UNITED FILTERS

OUF inc.

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MEXICO & CENT. AMERICA
Oliver United Filters Inc.
Oakland, Calif.

INDIA

Dorr-Oliver (India) Ltd., Bombay

EUROPE & NORTH AFRICA

Dorr-Oliver S. A. Brussels
Dorr-Oliver S.N.a.R.L. Paris

Dorr g.m.b.h. Wiesbaden (16)
Dorr-Oliver Co., Ltd., London, S.W. 1
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PHILIPPINE ISLANDS

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Manila

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Honolulu
A. R. Duvall

WEST INDIES

Wm. A. Powe — Havana

SOUTH AMERICA & ASI

The Dorr Co.
Stamford, Conn.

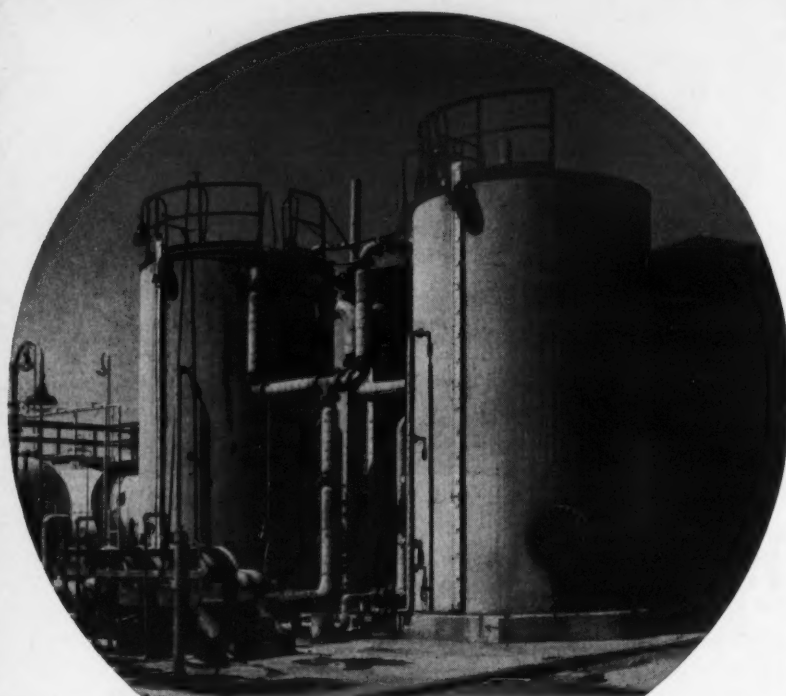
AUSTRALIA

Hobart Duff Pty., Ltd.
Melbourne

SOUTH AFRICA

E. I. Bateman
Johannesburg, Transvaal

When inquiring check CP 6669 on handy form, pgs. 2-3



How SHELL protects glycerine from contamination

The Shell Chemical Corporation is manufacturing glycerine by a synthetic process at its plant in Houston, Texas. There were two problems associated with the intermediate storage of the product. *First*, it was essential that the glycerine *not* be contaminated by metallic corrosion during storage. *Second*, the temperature of the glycerine had to be maintained.

Shell solved the first problem by having us fabricate the tanks out of nickel-clad steel. The second problem was solved by insulating the tanks with magnesia.

The two tanks, which are built in our Birmingham plant, are of butt-welded construction. They are smooth, easy to insulate and have no rough edges where corrosion can start.

Nickel is only one of several corrosion-resistant alloys that we know how to handle. We also fabricate and erect structures made from:

- CLAD STEELS — Chrome-nickel or straight chrome stainless, or monel.
- LININGS — Chrome-nickel or straight chrome stainless steel, monel or everdur.
- SOLID CORROSION-RESISTANT METALS — Chrome-nickel or straight chrome stainless steel, monel, aluminum or everdur.

We also can supply storage tanks and other equipment made of plain carbon steel. Write our nearest office for quotations.

CHICAGO BRIDGE & IRON COMPANY

Atlanta 3	2107 Healey Bldg.	Los Angeles 17	1536 General Petroleum Bldg.
Birmingham 1	1533 North Fifth St.	New York 6	3314—165 Broadway Bldg.
Boston 10	1007—201 Devonshire St.	Philadelphia 3	1650—1700 Walnut St., Bldg.
Chicago 4	2116 McCormick Bldg.	Salt Lake City 4	507 West 17th South St.
Cleveland 15	2212 Guildhall Bldg.	San Francisco 4	1545—200 Bush St.
Detroit 26	1535 Lafayette Bldg.	Seattle 1	1307 Henry Bldg.
Havana	402 Ahreu Bldg.	Tulsa 3	1649 Hunt Bldg.
Houston 2	2151 National Standard Bldg.	Washington 6, D. C.	1158 Caffritz Bldg.

Plants at BIRMINGHAM, CHICAGO, SALT LAKE CITY, and GREENVILLE, PA.

When inquiring check CP 6670 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Vertical leaf filters from 3-1/2 to 505 sq ft shown

Two-color, eight-page catalog pictures nine models of vertical pressure leaf filters. Construction and operation are explained with the aid of diagrams. Complete information is given on the various standard models, types and sizes for both corrosive and non-corrosive solutions. Section on solution clarification outlines uses and methods. Brief tabulation of specifications covers fourteen standard units. "Industrial Filters" is issued by Industrial Filter & Pump Mfg. Co., Dept. CP, 5900 Ogden Ave., Chicago 50, Ill. When inquiring specify CP 6671 on handy form, pages 2 and 3.

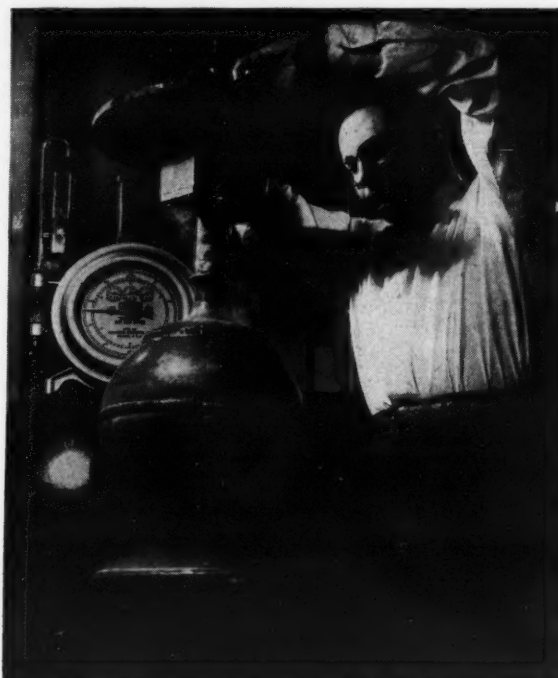
Stores 4 gal liquid helium for 100 days . . .

neck tube design of copper vacuum bottle minimizes heat transmission from atmosphere

Uses: Vacuum bottle for long-time storage of liquid helium. Development of the bottle may make it possible to ship liquid helium in thin-walled containers at atmospheric pressure, instead of as a compressed gas.

Features: Holds four gallons of liquid helium at a temperature of 8° above absolute zero for 100 days.

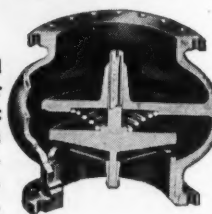
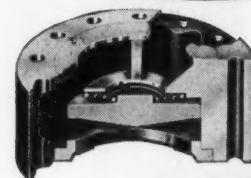
Description: Vacuum bottle, developed in cooperation with Westinghouse Electric Corporation, consists of two highly polished copper spheres—one inside the other—about a foot in diameter. Most of the air is evacuated



Liquid helium container being lowered into tank of liquid nitrogen

from the space between the two spheres. Bottle is immersed in a tank of liquid nitrogen at a temperature of -300°F to minimize heat losses.

Neck of the bottle, through which the liquid helium is poured and through which most heat transmission occurs, was specially designed to minimize the transmission. The neck tube is slightly more than 1/2" diam, is made long,



You can install Williams-Hager flanged Silent Check Valves in your water system in any position . . . horizontal, angular, vertical with flow upward or downward . . . and put an end to costly and annoying water hammer. Easy to install or reset without special tools, they are durable and compact with easy accessibility and low friction. Available in standard pipe sizes from 1" to 20". Investigate the many features of these valves . . . and save!

Write today for Bulletin WH-100.



THE WILLIAMS GAUGE CO.

Pump Valves . . . Water Gauges . . . Gauge Cocks . . . Steam Traps . . . Pump Governors . . . Feed Water Regulators . . . Water Columns

3015 PENNSYLVANIA AVE. • PITTSBURGH 33, PA.

When inquiring check CP 6672 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

and uses thin-walled tubing. By such design, it is said that heat inflow is reduced by 90%.

What happens is that the cold helium vapors serve to refrigerate the neck tube, thereby "neutralizing" the transmitted outside heat and narrowing the temperature gap between tube and helium.

A tiny opening at the top of the container serves as a safety valve by allowing escape of the slight amount of helium that evaporates.

Source: Produced by Hofman Laboratories, Inc., Dept. CP, 212 Wright St., Newark 5, N. J. . . . or for more information check CP 6673 on handy form, pages 2 and 3.

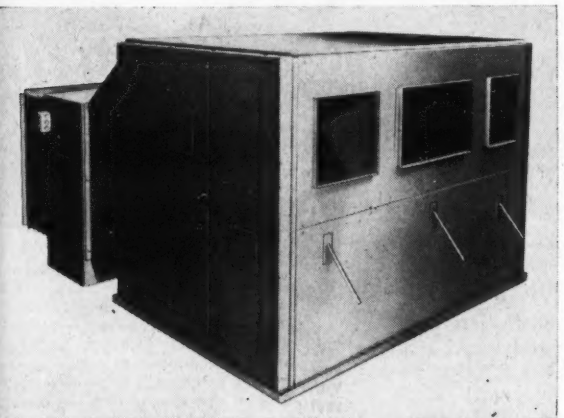
Meets air conditioning needs through single unit for maximum of 6 zones . . .

only one cooling coil and one heating coil is required in each unit

Uses: Designed to fill requirement for a single air conditioning unit handling several zones of small or medium buildings, or different floors of the same building.

Features: Filters and humidifiers can be incorporated into the unit to make year around air conditioning system. Possible to heat in one zone while cooling in another, because each zone is separately controlled by a set of dampers. By means of control equipment on the dampers and in the various zones, system gradually changes from cooling to heating or vice versa to eliminate in-between season conditioning lag.

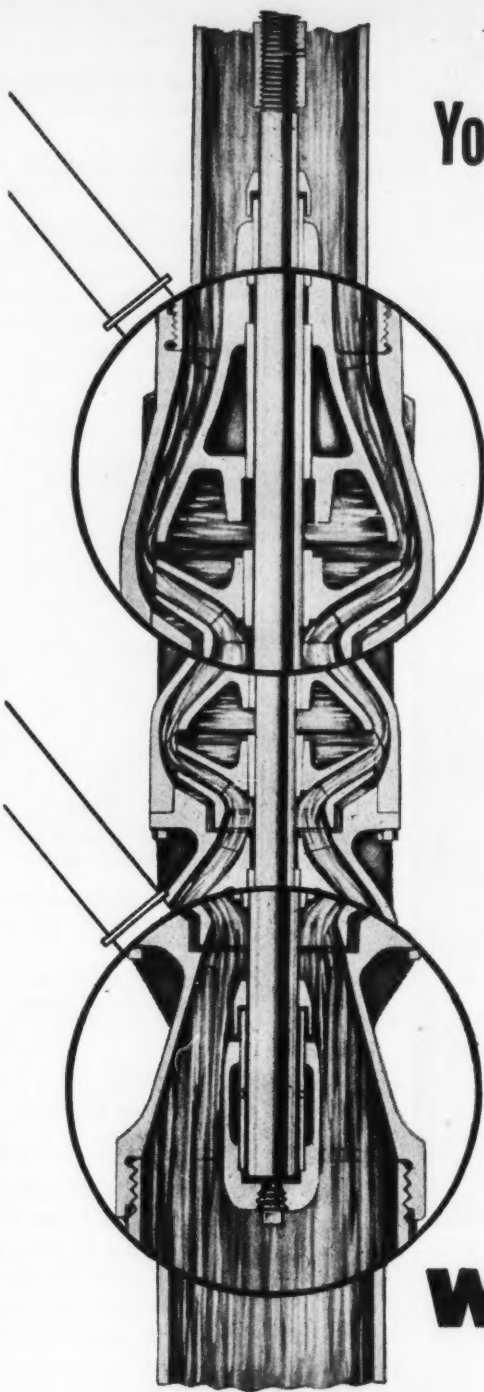
Description: Six sizes of the unit provide capacities as high as 23,400 cfm. Areas of the filter faces range from 11.1 sq ft to 60.4 sq ft. Casings of the units are constructed from heavy gauge steel panels supported on steel channel iron framework. Removable panels provide accessibility to internal parts and bolted construction of framework enables unit to be disassembled on the job where necessary. Coil headers are semi-steel casting, or



heavy seamless copper tubing, depending upon the type of coil and the duty. Standard units are designed for a maximum of 8 rows of cooling coils and 4 rows of heating coils located above the cooling coils. Option of 1/2" standard internal insulation, or external insulation on the job after the installation.

Source: The Trane Co., Dept. CP, LaCrosse, Wis. . . . or for more information check CP 6674 on handy form, pages 2 and 3.

SEPTEMBER, 1951



You Can't Lose Your Bearings

when you follow the tip
to buy **WORTHINGTON**

When you buy a vertical turbine pump, be sure the top and bottom bearings are well protected.

Here's the protection Worthington gives the bearings of its pump—better protection than you'll find in any other vertical turbine pump.

Bottom bearing. It's grease-packed and won't need attention for the life of the pump. Tests of grease-packed bearing versus rubber bearing show the advantage greatly in favor of the former.

Top bearing of oil-lubricated models. Seals above and below the drain ports keep out abrasives which would cause wear and damaging vibration. They also prevent water from entering the tube, which could cause emulsification of the oil and accelerated wear of the line shaft—a Worthington exclusive.

Sand collars. In water-lubricated models, sand collars at both ends of bowl assembly provide further protection by keeping abrasives away from the bearings.

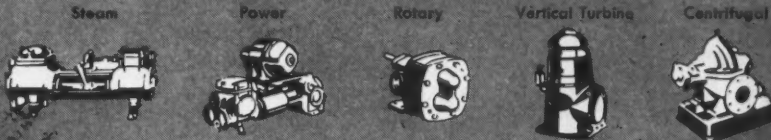
Worthington Vertical Turbine Pumps are available in sizes from 6 in. up, to handle liquids at temperatures of minus 7F. to 500F., with maximum head per stage over the entire size range.

For other Worthington exclusives—such as flanged and bolted bowls in *all* sizes—write to Vertical Turbine Pump Division, Worthington Pump and Machinery Corporation, Harrison, New Jersey or Denver 16, Colorado.

WORTHINGTON

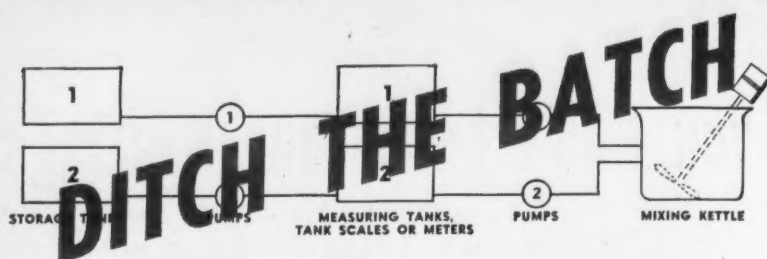


THE WORLD'S
BROADEST LINE
ASSURES YOU THE
RIGHT PUMP FOR
EVERY JOB

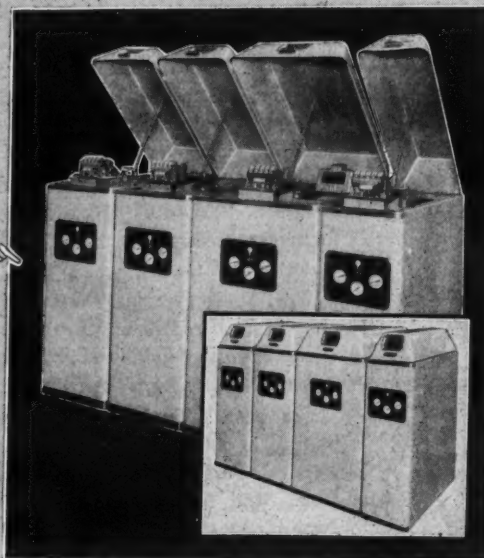
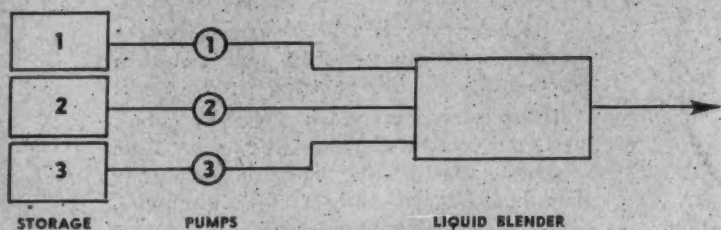


When inquiring check CP 6675 on handy form, pgs. 2-3

D1.9



switch to **CONTINUOUS**



NOW you can UP output . . . SAVE double pumping, labor, space and tank storage . . . with the Bowser CONTINUOUS blending system. It's all done in ONE OPERATION direct from storage tanks into blended storage, tank cars or other containers.

UNIFORMITY OF PRODUCT IS ASSURED at all times —homogenization is thorough.

Our new brochure on Precision Blending Systems is just off the press. Write for your copy today.

BOWSER, INC.

1315 CREIGHTON AVE., FORT WAYNE 2, IND.
LIQUID CONTROL SPECIALISTS
SINCE 1885

When inquiring check CP 6676 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Chemical resistance, high strength reported for synthetic rubber flooring material . . .

versatile product also cuts noise, acts as maintenance material for patching, waterproofing, pointing

Uses: For leveling and resurfacing floors. Can be applied as corrosion resistant top on lab tables and benches. Material acts as sound dampener when used over steel plates, and serves as versatile maintenance material for general patching, waterproofing, pointing, etc.

Features: Reported to have high resistance to acids, alkalis, water, and heavy point loads.

Description: Vulcrete is a synthetic rubber flooring material the color of light concrete. It is said to bond



inseparably with wood, metal, concrete, brick, slate, stone, asphalt mastic, composition — without need for a preliminary bonding step.

Source: Product of Flash-Stone Company Inc., Dept. CP, 30 E. Rittenhouse St., Philadelphia 44, Pa. . . . or for more information check CP 6677 on handy form, pages 2 and 3.

Creams offer protection against skin irritations caused by industrial solvents . . .

use of creams led to reduction of number of dermatitis cases from 3-5 per week to less than 1 per month

Uses: To protect against the different industrial liquids which result in irritating skin conditions.

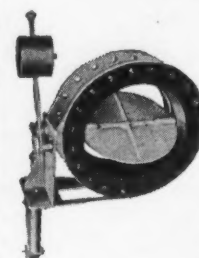
Features: Use of either of two creams protect workers against majority of substances which affect the skin.

Description: The creams are packaged in jars and contain vegetable and animal fats, Lanolin and waxes in a petroleum ointment base. "Skin-Cote" #1 is repellent to oils, thinners, and other water insoluble organic liquids. It causes the oil to form droplets and run off the skin. "Skin-Cote" #3 is repellent to water, aqueous solutions, water soluble oils and organic liquids soluble in water.

Results cited are a kerosene honing operation in a large automobile plant which was causing considerable irritation and resulting dermatitis. Problem largely disappeared within week's time with use of "Skin-Cote". An example of protection against water exposure is use of cream in an operation involving automobile hood sanding. The workers' hands are exposed to water, abrasive from the sand paper, and chemical action from some of the ingredients of the paint undercoat. Among 15 wet sanders, 8 showed

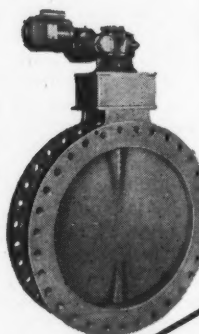
IMPROVE CONTROL OF FLUID FLOW AND SHUT-OFF

24" stainless steel butterfly valve with Cono-Control air diaphragm operator and auxiliary hand wheel control; operation at high temperature.



20" rubber-lined butterfly valve with air cylinder and counterweight, for corrosive vapors at 215°F.

30" butterfly valve for 60 p.s.i. operating pressure; equipped with Janelle electric motor operator.



Pipe up to
W. S. ROCKWELL
Automatic Butterfly
VALVES

For air, gases, liquids, semi-solids — corrosive or abrasive — hot or cold — at pressures to 100 p.s.i., Rockwell Butterfly Valves provide controlled flow and quick shut-off that's automatic and trouble-free.

Made in all pipe sizes to 72", any metal or rubber-lined; may also be manually controlled.

Ask to be put on list to receive monthly issue of the Valve News about Rockwell Butterfly and Slide Valves.

W. S. ROCKWELL CO.
220 Eliot St., Fairfield, Conn.

When inquiring check CP 6678 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

considerable irritation of the wrists and forearms. After the use of the creams, among a much larger group, only one case of dermatitis was reported.

Source: "Skin-Cotes" # 1 and 3 are products of The Boyer-Campbell Company, 6540 St. Antoine St., Detroit 2, Mich. . . . or for more information, check CP 6679 on handy form, pages 2 and 3.

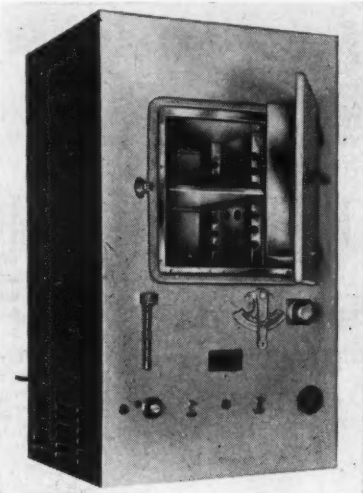
Chamber of space saving oven built on "bigger on inside, smaller on outside" design . . .

mechanically convected oven takes 50% less table space; has 35-180°C range

Uses: For general laboratory testing operations where requirements fall within range of 35°C to 180°C with temperature differential of plus or minus 1/2°C.

Features: Uses a minimum of table space. Interior dimensions of chamber are 12" wide x 14" deep x 14" high, with exterior dimensions of only 23" wide x 20" deep x 40" high. Savings of approximately 50% in table space are achieved. Floor of chamber is 9" above table for easy loading and unloading.

Description: Unit is constructed either of heavy gauge steel exterior, finished in baked-on laboratory gray enamel, with polished stainless steel interior, or entirely of 18-8 polished stainless steel. Blanket of 3" glass wool insulation surrounds the chamber on all sides. Oven is equipped with an adjustable hydraulic control thermostat and a limit-stat, an oven-temperature thermal switch, which prevents the chamber temperature from exceeding the control setting. Thermometer is built-in at eye level and shelves are adjustable to various heights. Furnished for operation on 110 or 220 v AC.



Space-saving table-type oven

Source: Model 1304 oven is built by The Electric Hotpack Co., Inc., Dept. CP, Cottman Ave. at Melrose St., Philadelphia 35, Pa. . . . or for more information check CP 6680 on handy form, pages 2 and 3.

Shows rotary ganged switches used up to 2200 rpm

Four-page, two-color bulletin illustrates and specifies ganged rotary switches of up to 60 positions. Types are available which will operate at a rotational speed of 2200 rpm. Physical data and photographs are given. "Switches by Daven" is issued by The Daven Co., Dept. CP, 191 Central Ave., Newark 4, N. J. When inquiring specify CP 6681 on handy form, pages 2 and 3.

This 'dust' man can be your best friend

Let him show you how you can Reclaim the Values in Escaping Dust—Wet or Dry

If valuable dust is escaping from your plant, you're overlooking an opportunity to attain top over-all efficiency.

How to recover this dust loss...how to exploit its full value, is Buell's job. That's why so many plant operators include us among their best business friends.

Looked up to as a leader in the science of dust collection, Buell draws on more than 200 man-years of experience in the design and construction of high-efficiency, economical-to-operate collector equipment.

Therefore, if a valuable-escape-dust problem exists in your plant, probably we can help. For full information about Buell techniques and methods write today. Ask for the new 'Dust Recovery' bulletin. Buell Engineering Company, Dept. 11-I, 70 Pine Street, New York 5, N. Y.



'SF' Mist Precipitator boosts production in acid manufacture.

C. E. ROSENBERG, A. R. P. S.

buell



HIGH-EFFICIENCY CYCLONES
ELECTRIC PRECIPITATORS
'LR' COLLECTORS
LOW DRAFT LOSS COLLECTORS
SPECIAL PURPOSE COLLECTORS
DUST HOPPER VALVES

ENGINEERED EFFICIENCY IN DUST RECOVERY

When inquiring check CP 6682 on handy form, pgs. 2-3



**Reduced from
400 Amps
to 180 Amps**

Twin Disc HYDRO-SHEAVE Drive

A material *reduction in current demand* for starting heavy loads is one advantage many plants report from the installation of Twin Disc HYDRO-SHEAVE Drives.

Take this cullet crusher operated by Diamond Glass Company, Royersford, Pennsylvania. Starting current was reduced from 400 amps to 180 amps. Running current was reduced from 40 amps to 18 amps. Moreover, a 15 hp motor replaced the original 25 hp—and a plain across-the-line starting switch re-

placed more elaborate equipment.

HYDRO-SHEAVES give you all the fluid drive advantages of smoother operation, smoother acceleration, overload protection, *plus* the probability of reducing starting current demand and *matching motor to running load* instead of starting load.

These drives slip right on over the motor shaft—in a few minutes—with sheave or sprocket adjacent to the engine bearings so that no additional side pull is imposed.

Perhaps a Twin Disc HYDRO-SHEAVE Drive can help you *improve your power factor*. See your Twin Disc Hydraulic Dealer, or write direct for Bulletin No. 145-B, and Installation Reports Nos. 1 through 14.

Clutches & Hydraulic Drives



TWIN DISC CLUTCH COMPANY, Racine, Wisconsin • HYDRAULIC DIVISION, Rockford, Illinois

BRANCHES: CLEVELAND • DALLAS • DETROIT • LOS ANGELES • NEWARK • NEW ORLEANS • SEATTLE • TULSA

When inquiring check CP 6683 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

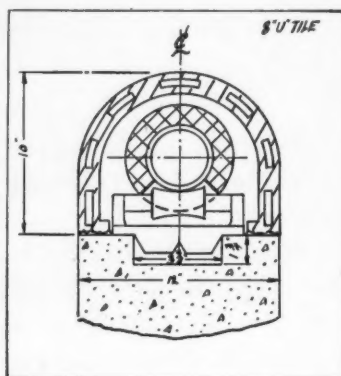
Prefab tile tunnel solves problem of small pipe . . .

underground conduit is like large tunnels for bigger pipe

Uses: Used for underground installations of one or a few small pipes. Conduit acts to insulate and protect piping.

Features: Shipped as a flattened hollow cylinder, the tile may be split to give two U sections. These are inverted over the pipe.

Description: U-Tile Conduit is designed to perform comparably with larger tile tunnels used to protect underground piping. U-Tile, however, is shipped as a flattened cylinder



Sectional drawing of conduit installation

which is split by tapping along the scorings on the flattened sides. This produces two U-shaped tiles. Tiles are then laid, as shown in sectional drawing to cover the pipe.

Near the end of each section of tile is a circumferential scoring which can be broken by tapping as before. This provides a rough edge for bonding mortar. Sealing with asphalt waterproofing mastic gives strong, tight, flush joints.

Source: Product of The Porter-Hayden Companies, Dept. CP, 825 Frelinghuysen Ave., Newark 5, N.J. . . . or for more information check CP 6684 on handy form, pages 2 & 3.

Extruders described

Four-page bulletin describes plastic extruders and auxiliary equipment. Special units for wire and cable covering, Saran mono-filament extrusion and other applications are covered. "NRM Extruders" is issued by National Rubber Machinery Company, Dept. CP, Akron 8, Ohio. When inquiring specify CP 6685 on handy form, pages 2 and 3.

How to save Labor and Money by Centralizing Lubrication

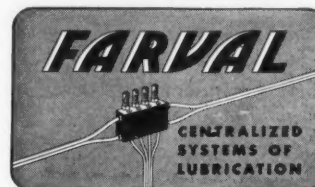
FOR more than 20 years, Farval has been saving manpower and money for users. Through efficient, dependable lubrication of machines and industrial equipment of all kinds, Farval saves 4 ways: It saves oiling labor, it saves lubricant, it reduces bearing expense, it eliminates down time.

The Farval System is a positive mechanical method of delivering oil or grease under pressure to a group of bearings from one Central Station, in exact quantities, as often as desired. It consists of a central pumping unit, two main supply lines and a measuring valve for each bearing.

Bulletin 25 gives you the facts and figures to apply to your own lubrication problems. The Farval Corporation, 3257 East 80th St., Cleveland 4, Ohio.



**Write for FREE
Bulletin 25**



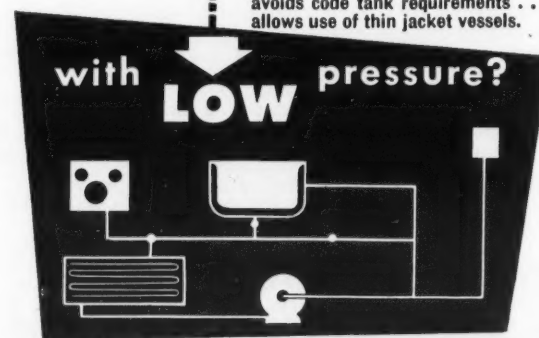
When inquiring check CP 6686 on handy form, pgs. 2-3

NEED HIGH TEMPERATURE

**SEND FOR
BULLETIN
101
TODAY.**

Wherever limited space, close control, or temperatures beyond the range of steam are required, you should consider electric fluid heat transfer.

Today, Hynes systems are being used for heating all types of jacketed vessels, heat exchangers, platens and rolls. The heart of the system is the patented Hynes Multi-Pass Heater which has eliminated oil carbonization and breakdown troubles. High temperature with low pressure avoids code tank requirements . . . allows use of thin jacket vessels.



**HYNES ELECTRIC HEATING DIVISION
MARTIN-QUAID COMPANY**

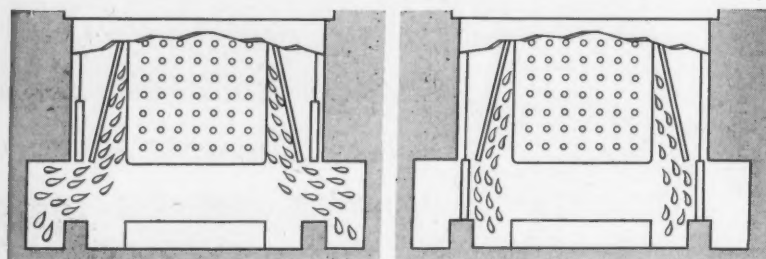
1815 W. Sedgley Ave., Philadelphia 32, Pa.

When inquiring check CP 6687 on handy form, pgs. 2-3

CHEMICAL PROCESSING

LOOK!

2 successive liquids
separated without mixing



CURB OPEN to permit first liquid to be separated and evacuated from machine.

CURB SHUT, second liquid is separated and removed through lower outlet without mixing with first liquid.

Industry benefits from broad use of centrifuging . . .

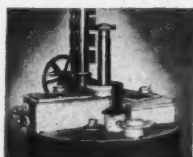
thanks to new AT&M developments. The centrifugal above — a profitable investment wherever two or more liquids are separated in a cycle — is but one of many outstanding AT&M centrifugals that save time, space, costs.

As the drawings above show, this curb is designed to remove two successive liquids without mixing. With the curb open, the first liquid is separated and evacuated through the curb outlet. The curb is then closed and the second liquid is separated and removed through a different outlet.

You, too, can benefit with AT&M equipment. Does away, in many instances, with settling tanks, filter presses, squeeze rolls, vacuum presses. Used in processes involving chemical preparations — explosives — nitrating — acid wringing — ammonium sulphate — food products — soap — drugs, medicines, cosmetics — oils and greases — paints, varnishes — ceramics, brick, clay — fertilizers — nitrates — sludges — textiles — carbonizing (textiles) — plastic bases.

Find out now how AT&M centrifugals can help you. Send for free booklet today.

P.S. PROVE TO YOURSELF how centrifuging can benefit you. Send us a sample of your material for centrifuging to your specifications or rent an AT&M laboratory centrifugal for your own tests at a nominal fee.



FUME-PROOF. No gases can escape from this specially designed AT&M centrifugal. Its fume-tight hood — originally developed by AT&M engineers to solve a special problem — is now used to advantage by many firms processing volatile liquids.



FREE
ILLUSTRATED BOOKLET

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1412 Hyde Park Avenue, Boston 36, Mass.

Please send me my free copy of the new AT&M booklet "Centrifugal Force." I am interested in the following processes:

Separation ☐ Extraction ☐ Dehydration ☐ Clarification ☐ Coating ☐
Filtration ☐ Draining ☐ Thickening ☐ Impregnation ☐ Sedimentation ☐

ANY OTHER PROCESS

Name Title

Company

Street

City Zone State

SAVE TIME,
SPACE AND
COSTS WITH **A.T. and M.**
CENTRIFUGING

When inquiring check CP 6691 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

**Little space required
for vertical condensate
return unit . . .**

simplex or duplex models are available

Uses: For applications up to 8,000 sq ft, equivalent direct radiation, at 20 psi.

Features: Handles water to 210°F without vapor lock. Design makes this unit especially suitable for installations where the return piping is close to floor level. Unit can also be in-



Vertical condensate unit

stalled in shallow pit, when desired, without risk of flooding motor which is mounted vertically above the pump and receiver.

Description: Complete condensate return assembly includes pump, choice of cast iron or steel receiver in either 10 or 15 gal capacity, enclosed float switch, single phase or three phase motor (1750 rpm). Simplex or duplex units are available.

Source: Roy E. Roth Co., Dept. CP, 2420 Fourth Ave., Rock Island, Ill. . . . or for more information check CP 6692 on handy form, pages 2 & 3.

**60 min to 24 hr cycles
available on timers . . .**

installed type models rated at 20 to 30 amp capacity

Uses: Commercial and industrial service as in blowers, samplers, blenders, moulding machines, dryers, pumps, mixers, agitators, extractors, processors, ovens, etc.

Features: Timers may be had for either permanent installation or for portable use with cord and plug. Compact in size, timers are enclosed in white or gray baked enamel cases, 4 1/2 x 3 x 3".

Description: Portable plug-in models are rated 6 to 15 amp, and installed type at 20 to 30 amp. Various time cycles are available ranging from 60 min to 24 hr. A SPST normally



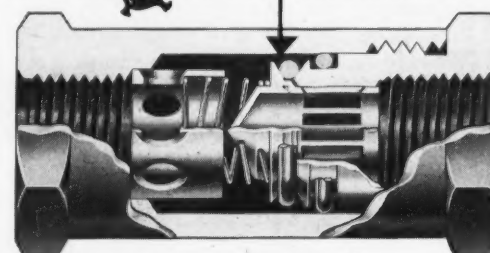
the
circle seal
principle

insures absolutely
leak-proof
performance
unequalled in
any check valve

provides positive, bubble-tight sealing with exceptionally low cracking pressure and pressure drop. The resilient "O" ring absorbs the closing shock insuring quiet trouble-free operation.

Pressures: 0 to 3000 psi
Temperatures: -65°F to 280°F
Sizes: 1/8" to 1"

CIRCLE SEAL precision check valves



JAMES-POND-CLARK

1247 East Green Street, Pasadena 1, Calif.

Engineering data
sent free of charge
on request.

When inquiring check CP 6694 on handy form, pgs. 2-3

BRIEFS...

from contemporary
publications

READ THEM . . . IN THIS ISSUE

You get a "quick look" at the most valuable articles being published in this field, and kindred fields . . . by reading the "BRIEFS" section of CHEMICAL PROCESSING every month.

Our Editors read more than 50 contemporary publications every month . . . select those articles they believe you will want to know about . . . and, in terse style, they tell you about them. Name of publication and issue are given so you can read those you want to know more about.

It's a monthly service . . . to save you time . . . yet keep you informed. See "BRIEFS" in this issue, page 102.

PROCESSING EQUIPMENT

open AC switch is timed and powered by a self-starting synchronous Telechron motor. Timer is set by turning indicator knob on plainly marked dial. Additional features such as pilot lights, a signal circuit, by-pass switch, stop-switch, and extra receptacles are available.

Source: Single set internal timers are made by The Tork Clock Company, Inc., Dept. CP, Mount Vernon, N. Y. . . . or for more information check CP 6695 on handy form, pages 2 and 3.

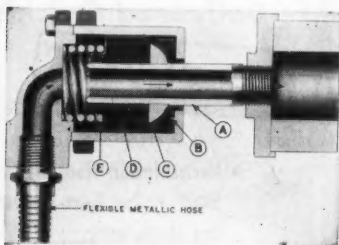
Self-supporting joint will hold 250 psi while turning . . .

pressure acts to seal joint by holding rotor against slip ring

Uses: It is widely used in paper-making, textile and rubber mills or wherever heating and cooling agents must be admitted to rotating rolls.

Features: It was developed specifically to combat the threat of misalignment by its self-supporting design. The 250 psi rating is higher than earlier models of similar design.

Description: As shown in sectional view of Type S Joint, nipple (A) is connected to roll. Graphite seal ring (B), connected to it, rotates against



Sectional drawing of self-adjusting rotary seal

convex surface of nipple collar (C). Another graphite guide (D) supports the joint. Spring (E) is used for initial seating only.

Pressure itself acts as the sealing force, since it forces the seal ring tightly against the collar. Shifting of the roll is no problem, because the entire joint moves with it. The overall design leads to a leakless, packless, self-lubricating and self-adjusting unit.

Source: Joints are a product of The Johnson Corporation, Dept. CP, Three Rivers, Mich. . . . or for more information check CP 6696 on handy form, pages 2 and 3.

For more information on product at right, specify CP 6697 . . . see information request blank between pages 2-3.

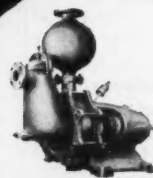


All of DURCO'S facilities serve your tough corrosion needs



From foundry to precision machine operation, every DURCO product is made right in our own plant. In a floor area of 400,000 square feet, 1000 people man the facilities of The Duriron Company to bring you better corrosion resisting equipment.

DURCO makes a pump, valve, pipe, fitting or specialized piece of chemical equipment in a DURCO alloy to solve your corrosion problems. Your nearest DURCO representative can tell you what it is. Why not call him in?



The Series R Self-priming Durcopump

Inspecting the accuracy of Durcopump shafts

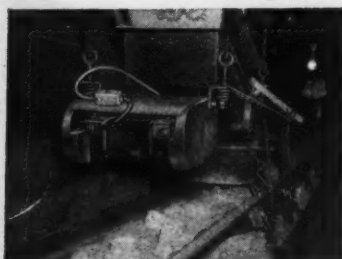
DURCO
CORROSION RESISTING
ALLOYS & EQUIPMENT

THE DURIRON COMPANY, INC.
DAYTON 1, OHIO

SYNTRON

"Vibra-Flow"

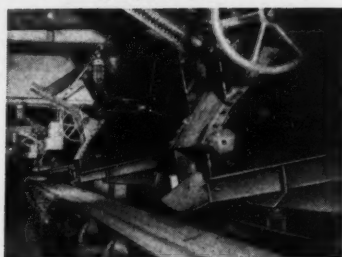
VIBRATORY FEEDERS PROVIDE



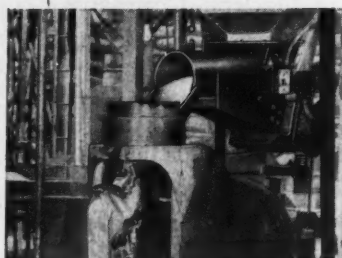
Feeding Limestone



Feeding-Drying a Fine Material



Feeding Sinter in a Mill



Feeding Frit to Bag Filler

● **INSTANT CONTROL** of rate of flow from pounds to hundreds of tons per hour.

● **EFFICIENT, low cost operation**—due to electromagnetic vibratory principle—using no motors, gears, belts, sprockets, etc.

● **FLEXIBILITY** in handling most bulk materials—hot or cold, dry or damp, fine or coarse.

● **ADAPTABILITY** to your present processing system with a minimum of change.

● **A VARIETY** of sizes and styles—light tonnage feeders with capacities from one to ten tons per hour—or heavy tonnage feeders with capacities up to hundreds of tons per hour—with flat pan, tubular, grizzly, screening and many other types of troughs.

● **SYNTRON engineers**, with years of experience in material handling problems, are ready to assist you by recommending the proper Syntron Feeder for your problem.

Write
for
Catalog
Data

SYNTRON COMPANY

110 Lexington Avenue

Homer City, Penna.

When inquiring check CP 6698 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

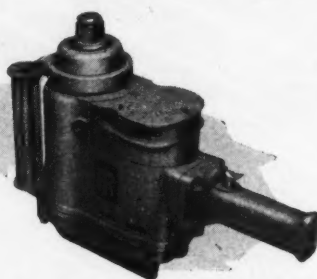
Augments spinning action with rotary impact on tough jobs . . .

tool for nut-running uses impact to loosen frozen nuts

Uses: Heavy duty power tool is used for tightening or loosening nuts—especially in industrial and automotive maintenance fields—where corrosion or other factors tend to make the nuts stick.

Features: Ordinarily the tool delivers a smooth spinning power, but if nut sticks, the power changes to hundreds of rotary impacts per minute. Motor is not endangered even if rotation stops entirely.

Description: Impactool 34U is powered by a universal electric motor. Ball and cam mechanism, in conjunction with a hammer and anvil, convert rotary motion to 900 rotary impacts per minute. Tool is only 10 3/16" high, 4 3/4" wide, and 14 1/8" long excluding the adjustable grip handle which may be attached in any one of three positions. The other handle with the



Power tool delivers 900 rotary impacts per minute when nut refuses to turn

trigger switch may also be rotated 180°. This makes it possible to maneuver the Impactool into hard-to-reach spots.

Since it weighs 32 1/2 lb, the tool is equipped with skid runners on the underside so that it can be slid under equipment. Tool has been designed so that no kick or twist is transmitted to the operator even in difficult positions. It can also be quickly and easily reversed by an easy-to-grip switch, located for convenient operation.

Various sockets are available for specific jobs. A standard automotive kit furnishes 3 bolt clearance sockets and 2 Budd Wheel sockets. Nearly 100 other sockets are stocked in sizes up to 1 1/4" bolt size.

Source: Produced by Ingersoll-Rand Company, Dept. CP, Phillipsburg, N.J. . . or for more information check CP 6699 on handy form, pages 2 and 3.



Serves the World with Fish Dehydrating and Reduction Equipment Through these Agencies:

WILBUR-ELLIS COMPANY, 334 California St., San Francisco 4, Tel. Garfield 1-1775. Cables: "Wilburell"

WILBUR-ELLIS CO. (Pty) LTD., 813 Grand Parade Center, Cape Town, So. Africa, Tel. 2-7595. Cables: "Wilburell"

BULLOCK-SMITH ASSOCIATES, 136 Liberty St., New York 6, N.Y., Tel. Beekman 3-0370-1. Cables: "Bul-smith"

FRAZAR & HANSEN, LTD., 300 Clay St., San Francisco 11, Tel. Exbrook 2-5112. Cables: "Frasen"

W. S. SANDERS, 1810 Core Avenue, Norfolk 7, Virginia, Tel. 51074

CITRUS CHEMICAL PRODUCTS, Inc., Plymouth, Florida, Tel. Plymouth 2211

Contact us—or any of these agencies for your dehydrating and reduction requirements.

Currently shipping fish reduction equipment to England, So. Africa, Peru, Norway, Canada, Mexico, and throughout the United States.

On receipt of request we will advise you of nearest P&L equipment installation and arrange for your inspection.

— MANUFACTURERS OF —

Reduction Equipment from "Bin to Sack" — Cookers — Hammer Mills — Rotary Fish Presses — Low Temperature Driers — Etc. Etc.

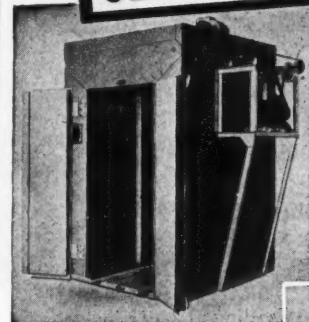
P & L WELDING & MACHINE WORKS

519 East LaPalma St., ANAHEIM, CALIF., Phone: Anaheim 4311

When inquiring check CP 6700 on handy form, pgs. 2-3

**Better in Design and Performance
Priced Right—Delivered Quickly**

GEHRICH^{standard} OVENS

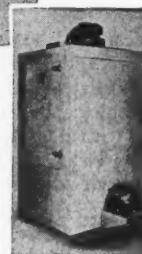


TRUCK OR RACK TYPE

Made in 18 sizes. Direct or indirect gas or oil, steam or electric heating. Equipped with 2 or 3 motor operated recirculating fans and Factory Mutual approved explosion release latches.

BENCH TYPE

Made in 3 sizes for laboratory or small scale production.



CABINET TYPE

For multiple tray loading; made in 3 sizes, gas or electric. Equipped with motor operated recirculating fan and F. M. approved explosion release latch.

- Recirculation Heating to 500° F. for Best Operating Uniformity.
- Aluminized Steel, Insulated Panel Construction.
- Standard Safety Controls.

CATALOGS
ON
REQUEST

GEHRICH OVEN DIVISION

W. S. ROCKWELL COMPANY

220 Eliot Street • Fairfield, Conn.

When inquiring check CP 6701 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

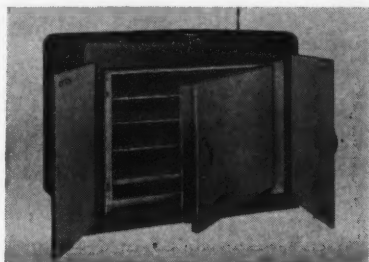
Processing at high temps intended application of portable electric oven . . .

temperature range of this oven is from 100 to 800°F

Uses: Higher temperature processing such as required for stress relief of springs and plated parts.

Features: Extremely uniform temperature throughout. Construction permits nesting of one oven on top of another. Can be used in groups or banks and can be operated individually, or selected ovens in the group can be cut-out or heated at different temperatures.

Description: Size is 30" wide x 25" deep x 24" high, outside. Inside dimensions are 22" wide x 18" deep x 16" high. Construction is heavy gauge steel with Fibreglas insulation. Operates from any 110 volt outlet. No special wiring is required. Thermostat, outside reading thermometer and pilot light are standard equipment. Additional movable shelves and oven stand are available.



Electric oven

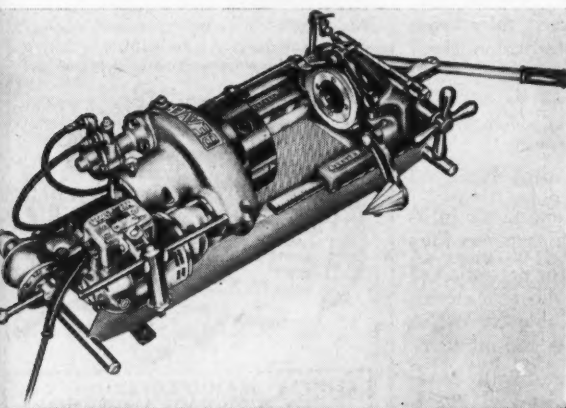
Source: Model HT oven is made by Grieve-Hendry Co., Inc., Dept. CP, 1101 N. Paulina St., Chicago 22, Ill. . . . or for more information check CP 6702 on handy form, pages 2 and 3.

Safe operation, light weight featured in pipe tool . . .

device cannot be started unless chuck wrench has been removed from the chuck

Uses: Lightweight pipe tool.

Features: Safety switch lock makes it impossible to start this model unless chuck wrench has been removed



Lightweight pipe tool

from the chuck and placed in its holder; both workmen and machine are thus protected from injury.

Description: Model E pipe tool now has the same advantages as the larger models in this line.

Source: Beaver Pipe Tools, Inc., Dept. CP, Warren, Ohio, is the maker. . . or for more information check CP 6703 on handy form, pages 2 and 3.



Efficient Gasoline Sweetening Process Uses Eductor To Mix Slurry With Petroleum

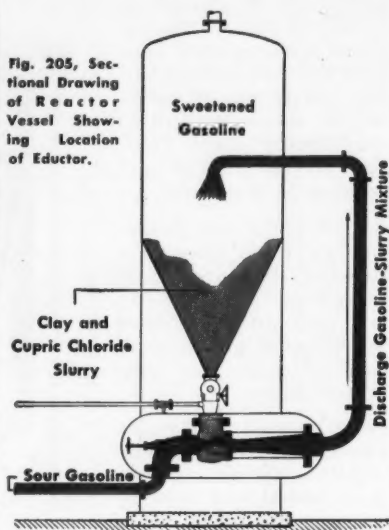
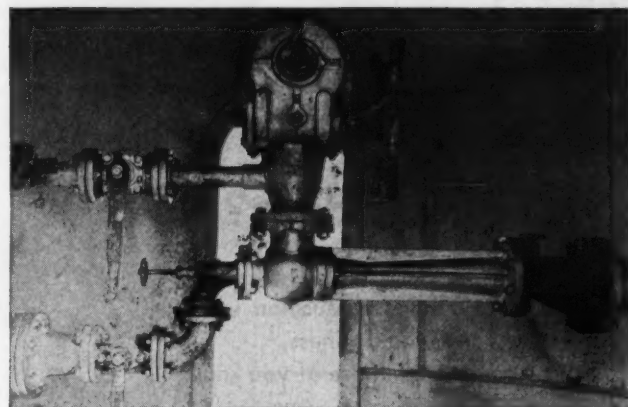


Fig. 205, Sectional Drawing of Reactor Vessel Showing Location of Eductor.

SK 4" Fig. 205 Jet Eductor Used to Mix Distillate and Cupric Chloride Slurry.



An excellent example of the manner in which an SK Jet Eductor can be used to mix a slurry with a liquid is an application at the El Dorado, Kansas, refinery of Skelly Oil Company.

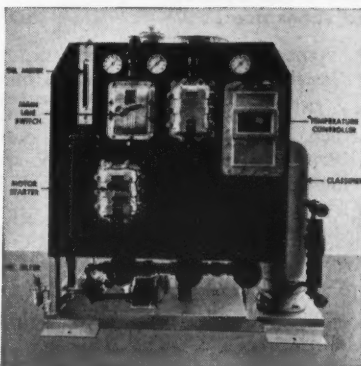
As a part of a very significant process designed for the copper sweetening of sour gasoline, Skelly engineers have incorporated an SK Fig. 205 Jet Eductor to entrain and mix a slurry reagent with the liquid to be treated. The eductor is located at the base of a cupric chloride reactor at the apex of the conical bottom of this vessel as shown in the photo above.

Fig. 205 shows how the eductor operates. Distillate, which has been made moisture-free in a salt tower and heated in a heat exchanger, is

used as the pressure liquid. The velocity of this distillate, as it issues from the eductor nozzle, entrains the slurry reagent and the two are mixed intimately in the throat of the eductor. The mixture discharges into a transfer line which leads back into the reactor. The treated distillate is taken from the top of the reactor and is sent through additional processing.

Many chemical plants are using SK Jet Eductors to lift, pump, mix, and agitate liquids and to handle solids and slurries because of their efficient operation, their economy, and their low maintenance requirements.

Bulletin 2-M offers complete details on the many types available, their construction, operation, and characteristics. Send for a copy.



Blaw-Knox Company uses SK Panel Mounted Universal Rotameters to meter filtered oil on this company's Electroil Foggers as shown in the photo below. Since the Fogger is used for producing a stable oil fog in a gas stream, the accuracy of fluid flow is important. SK Rotameters offer the desired accuracy. For information on all types of SK Rotameters, request Bulletin 18-RA.



When inquiring check CP 6704 on handy form, pgs. 2-3

Is YOUR Neck Way Out, Too?

... with more
business than
you can produce?

Sounds like a happy situation when you say "too much business," but it sure isn't, as those of you know who are on that spot. And we're on it, too, since occasionally your requirements exceed our production. But . . . in an attempt to help you with your fastening problem, we've produced a TIME SAVER, shown below!



FREE—A-N Stainless Fastening Selector

This handy slide-chart instantly identifies A-N Nos. pertaining to stainless steel nuts, screws, bolts, rivets, cotter pins, washers; gives sizes and other data. Write for "Chart 51E" TODAY!

Anti-Corrosive
Metal Products Co., Inc.
Manufacturers of STAINLESS STEEL FASTENINGS
CASTLETON-ON-HUDSON, NEW YORK

When inquiring check CP 6705 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

**Areas remote from plant system
can be served by independent
cyclone units . . .**

streamlined air travel avoids back pressures in air flow directions

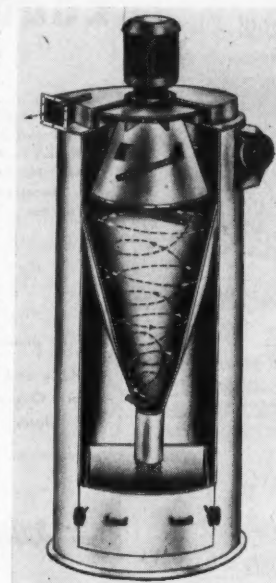
Uses: For dust control in limited and remote areas too far removed for effective inclusion in central system. Also for various locations where completely independent dust collector units are required, or central systems are not feasible.

Features: Air-dust separation is accomplished by means of two-stage action utilizing internal skimmers. Dust-laden air enters at the side of the unit and spirals smoothly down to the cone outlet. As the cleaned air spirals up through the internal skimmer stack most extra fine dust particles, carried upward with the outgoing air, are concentrated by the tapered stack. Here, they are skimmed off and returned to dust outlet.

Smooth, continuous, streamline air travel from inlet to outlet eliminates power-consuming eddy currents and back pressures caused by changes in air flow direction common to most cyclone designs.

Description: Units are available in four sizes from 500 to 2,000 cfm, and can be furnished with or without secondary filters. They operate at 6 inches internal static pressure. Fan can be discharged at any 45 degree interval.

Source: Unit dust controllers are built by The Day Company, Dept. CP, 810 North Third Ave., Northeast, Minneapolis, Minn. . . . or for more information check CP 6706 on handy form, pages 2 and 3.



View shows air inlet, outlet, skimmer stack, air travel path

**Rope resists water absorption,
gives lower conductivity
and safer use . . .**

immersion tests show importance of time factor in its bearing on safety of rope use around high power lines

Uses: . Impregnated rope was designed for protection of linemen, maintenance and other workers who face electrical hazards. Safety factors make it applicable for use in marine and construction work, both indoors and outdoors.

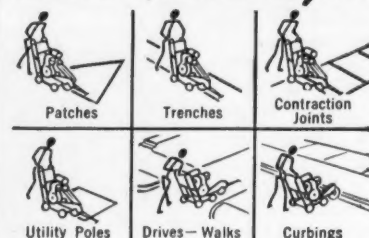
Features: Remains flexible at all times with fewer kinks, whisks and hockels to hamper the worker. Wears longer, since keeping moisture under cuts down the decay factor. Impregnating process will not irritate the hands.

Description: The manila rope manufactured by the Se-Lectric process has the property of blocking water absorption and resisting electrical conductivity. In processing, the individual fiber and yarn are treated and lubricated by a combination of methods and materials. In one test procedure it is cited that it requires only 5000 v impressed on a 5-ft piece of untreated 1/2" rope to produce



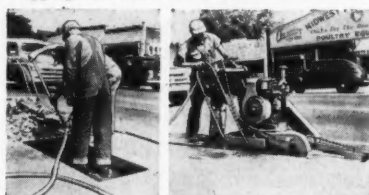
**NOW SAW
CONCRETE
!**

Save by Sawing...



**with the
CLIPPER
CONCRETE SAWS**

You save Time and Material when you cut straight, smooth edges with a Clipper Concrete Saw before breaking out for patches, trenches or machinery bases. Eliminate radial cracks—stop spalling! Imagine . . . Saw up to 12" per minute 1" deep in Limestone aggregate concrete!



Saw 1/4 slab depth . . . then break out. Only a minimum of replacement material necessary!



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Send FREE Literature, Information and Prices
on the NEW CLIPPER CONCRETE SAWS SC

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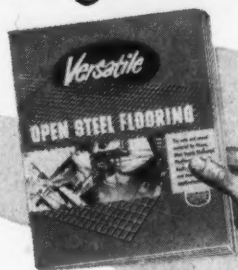
When inquiring check CP 6707
on handy form, pgs. 2-3

CHEMICAL PROCESSING

IF YOU WALK ON IT

**IT CALLS FOR
OPEN STEEL FLOORING**

Ready for you—



**THE NEW
IDEA-BOOK
"VERSATILE"
OPEN STEEL FLOORING**

**Write for your
free copy today!**

This 16-page book tells you and shows you all about Open Steel Flooring—the strong, durable, ventilated, versatile surface that provides industrial plants with safety-sure walkways, platforms, stairs, floors, catwalks, etc. Get a copy and read the Specifications that assure top quality Open Steel Flooring . . . the flooring tailor-made to fit your individual needs—that provides safe walking-working conditions in your plant.

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These Manufacturers assure
top quality engineered grating.

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STANDARD STEEL SPRING CO.
Gary, Indiana
WALTER BATES COMPANY, INC.
Joliet, Illinois
THE TRI-LOK COMPANY
Pittsburgh, Pa.
BLAW-KNOX COMPANY
Pittsburgh, Pa.
BORDEN METAL PRODUCTS CO.
Elizabeth, N. J.
HENDRICK MANUFACTURING CO.
Carbondale, Pa.

When inquiring check CP 6708
on handy form, pgs. 2-3

PROCESSING EQUIPMENT

10 ma of current, while Se-Lectric rope requires 73,000 v to force the same current through. Both ropes were showered with water for two hours before the test. Water absorption tests show that after four hours of immersion, Se-Lectric rope had an increase in weight of 9%, whereas untreated rope gained 41%.

Source: Se-Lectric Manila Rope is manufactured by South Eastern Cordage, Dept. CP, 634 N.B.C. Bldg., Cleveland 14, Ohio. . . or for more information check CP 6709 on handy form, pages 2 and 3.

**Local drying accomplished
with portable unit . . .**

adjustable mounting permits unit to be placed near any job

Uses: Any place where steady or intermittent flow of air at 110 to 130°F is needed.

Features: Unit is portable. Mounted on ball-bearing casters; it can be rolled anywhere that 115 v, 60 cps is available. Height adjusts from 3' 5" to 5' 3". Nozzle extends from 17" in closed position to 26" when open.

Description: "Rocket Blower Dryer" contains fan powered by 1/12 hp motor and two sets of heating elements. With one set in use, output is at about 110°F.



Adjustable blower can be rolled
to needed location

Both sets bring this up to 130°F. (These figures based on 75°F ambient temperature.) Output is rated at 400 cfm through 2 1/4" nozzle opening. Base is of cast iron for stability and has a span of 22". Unit is finished in baked grey ham-mertone with chrome trim and weighs 55 1/2 lb (net).

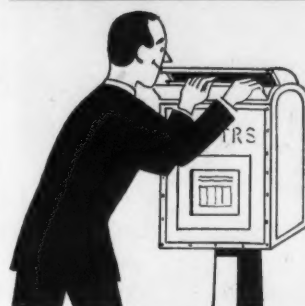
Source: Available from Ullman Products Corp., Dept. CP, Ullman Bldg., Brooklyn 15, N. Y. . . . or

for more information check CP 6710 on handy form, pages 2 and 3.

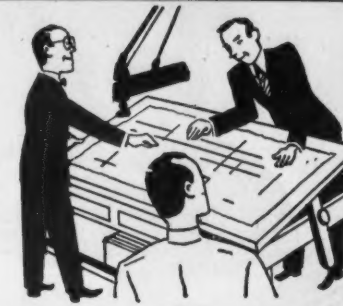
**Recommendation booklet covers
electrical carbon brushes**

Two-color, 28-page booklet completely covers carbon brushes. Actual photographs accompanying text show steps and tests during the process. Descriptive material gives details of the process. Various types of carbon brushes are discussed to show their advantages and limitations. Special stress is placed on the physical characteristics that lead to use of each type in a particular application. Two large sections are devoted to specifications of existing types and special points of mechanical design. Sheets for recording data on carbon brushes are included with this booklet. GEA-5597 "Carbon Brushes for Electrical Equipment" is issued by General Electric Company, Dept. CP, Schenectady 5, N. Y. When inquiring specify CP 6711 on handy form, pages 2 and 3.

**HOW TO SAVE TIME and MONEY
IN BUYING DRYING EQUIPMENT**



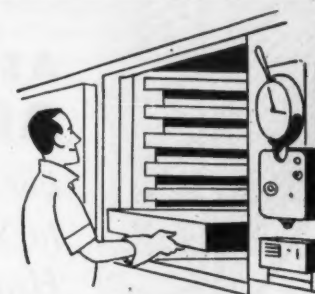
1 The first step in saving time and money in buying drying equipment is to become thoroughly acquainted with the Proctor approach to solving drying problems . . . by writing for Bulletins 343 and 361. These bulletins explain the way Proctor engineers tackle your problem.



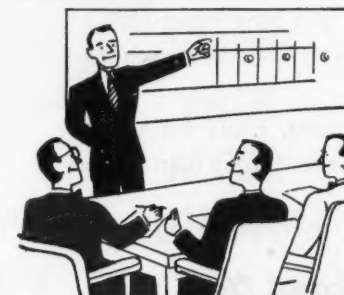
2 With this information as a background, consider your equipment needs just as soon as you know that drying is to be a part of your process. View that process as a whole, rather than select individual pieces of equipment separately.



3 Pick up your telephone—or if that is inconvenient—dictate a letter outlining your problem. A Proctor engineer will be in touch with you to discuss it in detail and arrange for test work.



4 Tests will be conducted either in the Proctor laboratory—or if the nature of your product demands, in your own plant. The results will serve as a guide in making preliminary plans for equipment.



5 On the basis of the test work Proctor engineers will present recommendations on the size and type of equipment required to meet your needs. This equipment will be planned to serve as a major link in the over-all process.



6 Based on all of the test work and engineering that has been done—your sales contract will guarantee the performance of your Proctor system. You save time, money and are assured equipment that is "job-engineered" for you.

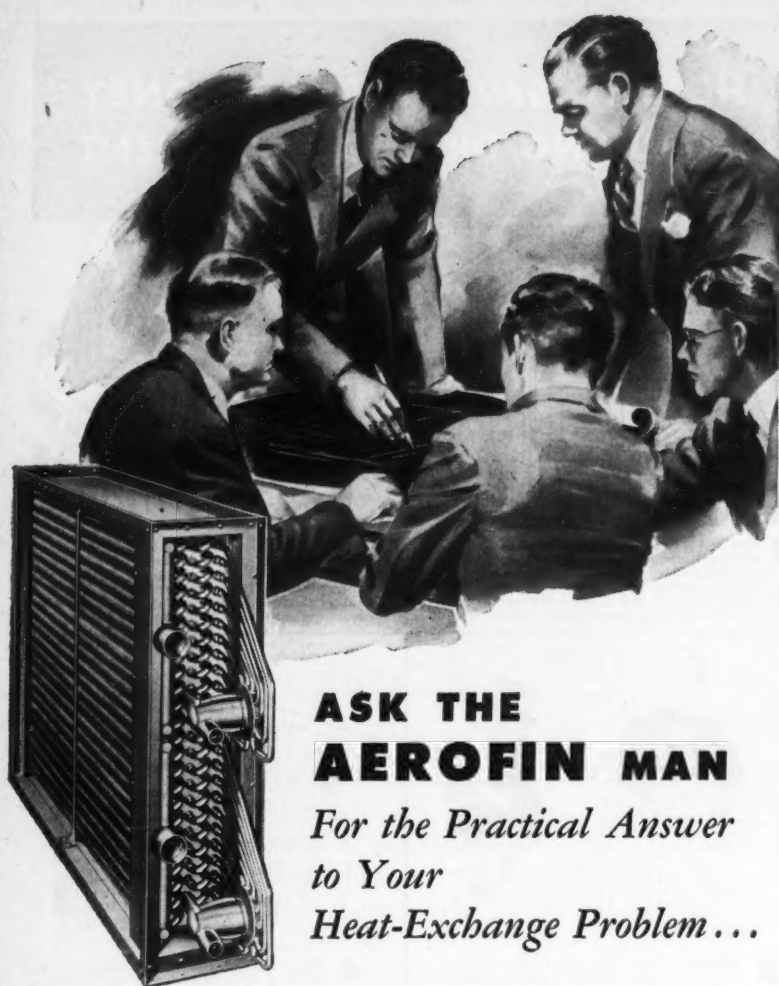
PROCTOR & SCHWARTZ, INC.

633 TABOR ROAD • PHILADELPHIA 20 • PA.



Plan now to attend the Chemical Show to be held in New York's Grand Central Palace, where you can become better acquainted with Proctor men and the Proctor approach. It isn't too early to mark your calendar.

When inquiring check CP 6712 on handy form, pgs. 2-3



ASK THE AEROFIN MAN For the Practical Answer to Your Heat-Exchange Problem...

There is a competent Aerofin heat-transfer engineer near you, qualified by intensive training and long experience to find the *right* answer to your own particular heat-exchange problem.

This specialized knowledge is there, ready for you to use to your greatest advantage. Ask the Aerofin man — and be right.



AEROFIN CORPORATION

410 South Geddes St.
Syracuse 1, N. Y.

Aerofin is sold only by manufacturers of nationally advertised fan system apparatus. List on request.

When inquiring check CP 6713 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

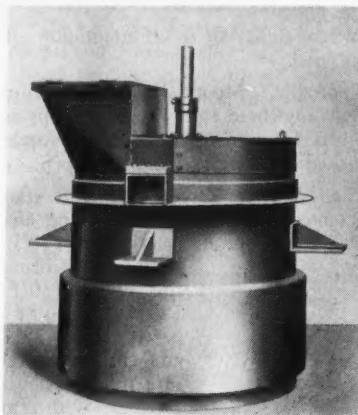
**Custom made mixers
handle from 400
to 1200 gal. . . .**

agitators and scrapers are also designed to fit needs

Uses: For general heavy process mixing requirements.

Features: Each mixer is designed for the specific job it will do. Even the agitator or scrapers are laid out for a particular job.

Description: Constructed from heavy welded steel plate, these mixers range from 400 to 1200 gal capacity.



First built for paint mixing, they are now used in many processes. Drive is secured through a gear reducer on top of the tank.

Source: Development of Lloyd Engineering Co., Dept. CP, 59 Stephen St., Belleville, N.J. . . . or for more information check CP 6714 on handy form, pages 2 and 3.

**Announces 10 hp capacity
magnetic starter
for motors . . .**

measures $6\frac{1}{4} \times 10\frac{3}{4} \times 4\frac{1}{4}$ inches

Uses: For 10 hp rated motors requiring starters or contactors.

Features: Savings effected because it eliminates purchase and use of larger capacity starters than required.

Description: Rated at 10 hp, 220-550v, 3 phase AC. Constructed with renewable, rectangular type contacts of specially developed silver for maximum arc-quenching properties and lowest contact resistance. Terminal boards are molded of arc-resistant alkyl and equipped with pressure connectors.

Source: Manufactured by Furnas Electric Co., Dept. CP, 1013 McKee St., Batavia, Ill. . . . or for more information check CP 6715 on handy form, pages 2 and 3.



Each Tri-Lok step consists of a panel of Rectangular, Diagonal, or U-type Tri-Lok flooring in any desired width, length, depth, and bar spacing.

SAFE—checker plate nosing bars make each step stand out clearly. Abrasive edging also available.

CLEAN—clogless, rivetless Tri-Lok joint prevents accumulation of dirt, moisture, rust.

STRONG—added strength provided at maximum load contact by shape and rigidity of nosing bar.

Write today for bulletin NS-1103

DRAVO CORPORATION
National Distributor for the Tri-Lok Company
Dravo Building, Pittsburgh 22, Pennsylvania
Sales Representatives in Principal Cities



When inquiring check CP 6716 on handy form, pgs. 2-3



The current issue of "Much Ado About Nothing" features the techniques of evacuating spaces of various volumes in the testing of instruments, simulation of altitude, vacuum fumigation, etc., besides covering other interesting aspects of high vacuum applications.

We'll be glad to send a copy and put your name on our mailing list for future issues.

BEACH-RUSS COMPANY
46 CHURCH STREET • NEW YORK 7, N. Y.

When inquiring check CP 6717 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

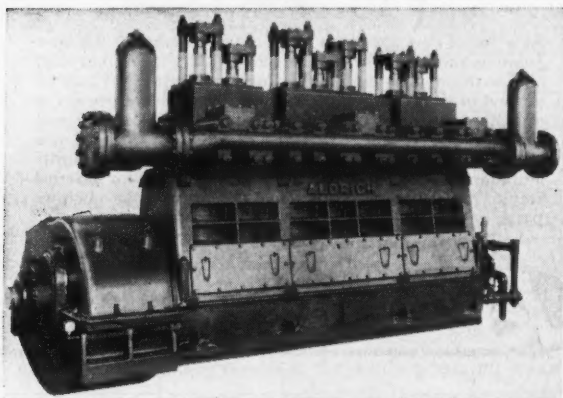
Line of liquid flow is straight through cylinder section of pump . . .

three-, five-, seven-, and nine-cylinder pumps all use 6" stroke

Uses: High pressure, moderate capacity pumps find service in chemical handling, heavy forging press, steel mill descaling, water injection in oil fields, lean oil pumping, and similar tasks.

Features: Fluid flow from intake manifold to discharge header is a straight line. This design affords a high volumetric efficiency.

Description: Series includes triplex, quintuplex, septuplex and nonuplex 6" Stroke Direct Flow Pumps. Horsepower runs about 100 per cylinder. Pumps operate at



Seven-cylinder reciprocating pump

speeds up to 300 rpm being suitable for either direct drive from engine or synchronous engine-type motor. Wearing parts are interchangeable between any of the models. Fluid-end is sectionalized for inexpensive maintenance.

Either alloy steel (up to 1000 psi) or porcelain (up to 2000 psi) plungers are used.

Source: Manufactured by the Aldrich Pump Company, Dept. CP, Allentown, Pa. . . or for more information, check CP 6718 on handy form, pages 2 and 3.

Tabulates uses of glass insulation in -50 to + 800° F range

Booklet presents, in 24 pages, installation methods and data for pipes and fittings, and process equipment in three temperature ranges: -50 to +32°F, 32 to 212°F and 212 to 800°F. Tables show sizes and thicknesses of available insulation for pipes 1/4 to 36" in diameter, and recommended thicknesses for piping and vessels in operating ranges covering the span -50° to +800°F. Also specified are standard blocks for flat surfaces and large diameter equipment, beveled lags and standard curved segments.

Physical properties, graphing of thermal conductivity variation with temperature, and the spacing required around piping to assure working area for application are detailed. Pictures and diagrams illustrate procedure for insulating vertical and horizontal tanks, ducts, removable covers and tank heads. "Foamglas Insulation" is issued by Pittsburgh Corning Corp., Dept. CP, 307 Fourth Ave., Pittsburgh 22, Pa. When inquiring specify CP 6719 on handy form, pages 2 and 3.



Alcoa Heat Exchanger News

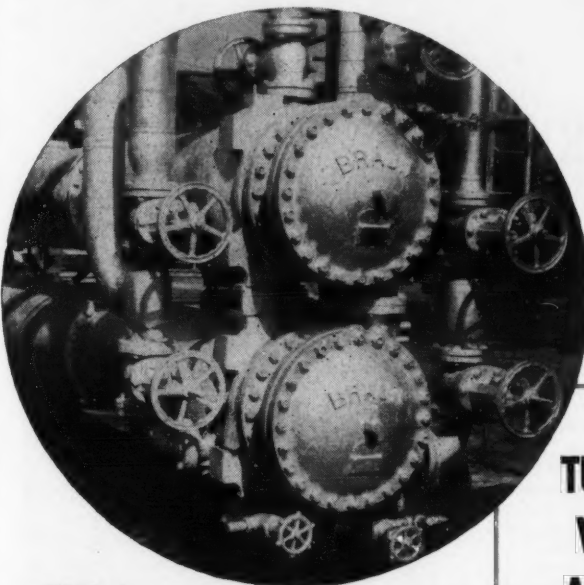


Published by Aluminum Company of America

ALUMINUM TUBES SAVE THOUSANDS IN COST OF FURFURAL EXCHANGERS

. . . stay free of deposit, cut maintenance and down time

The furfural extraction process for lube oil presents some interesting heat exchanger problems. Copper, acting as a catalyst, polymerizes the furfural. The resulting hard, tenacious deposit requires frequent cleaning.

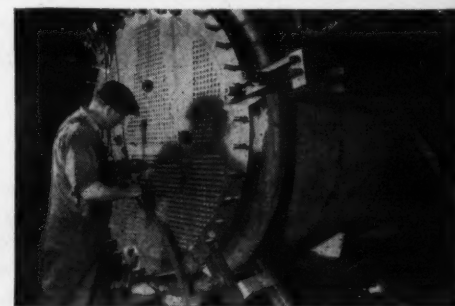


Then three years ago a large west coast refinery decided to try Alcoa Aluminum Tubes in their furfural exchangers. After several months operation, advantages of aluminum tubes became apparent. **ALUMINUM REMAINS COMPLETELY FREE OF FOULING IN FURFURAL SERVICE.** Aluminum tubes in furfural service do not require cleaning. In addition to the thousands of dollars saved in original cost, aluminum saves several thousand more each year in reduced maintenance and down time.

Aluminum tubes are ideal for hundreds of chemical and petroleum applications, and Alclad 3S-H14 tubes are ideal where fresh, salt, or brackish cooling waters are encountered. They are the lowest cost commercial tubes you can buy.

Ask your local Alcoa specialist for more facts and figures to help you in long-range planning.

TUBING WITH ALCOA ALUMINUM



ALUMINUM COMPANY OFFERS NEW BOOK



This new, 24-page booklet will answer many of your questions about Alcoa Tubes. It covers fabrication techniques . . . alloy selection . . . applications both chemical and petroleum. It describes tube cleaning, the use of inhibitors and methods of cathodic protection. It contains complete information on fluid flow and heat transfer characteristics, plus tables of physical properties and specification data. Write for your free copy today: **ALUMINUM COMPANY OF AMERICA** 1861J Gulf Bldg., Pittsburgh 19, Pa.

Aluminum tube sheets should be used wherever possible. For best corrosion resistance, use Alclad 4S-F Alloy Plate. For high operating pressures, use high tensile strength 61S-T6 Alloy Plate.

Existing commercial practices should be followed for tube hole spacing. Grooved tube holes may afford tighter tube joints, but are not necessary. Standard tools and techniques are used for rolling-in Alcoa Tubes.

The use of steel tube sheets is satisfactory in most fresh cooling waters. If necessary, cathodic protection may be provided in the form of zinc strips or zinc metalizing of the tube sheets.

Complete fabrication, installation and service information is contained in Alcoa's new booklet, "Alcoa Aluminum Heat Exchanger Tubes." Write for your free copy.

When inquiring check CP 6720 on handy form, pgs. 2-3

WELDCO gives you

this TWIN GUIDE

to BETTER TUBING SERVICE

Dependability

Whenever you need reliable tubing, specify Weldco and be sure of getting the best. For Weldco is made by tubing specialists . . . men who have the equipment, facilities and experience to give you a product that's properly welded, carefully finished all the way through. For top-quality tubing, mechanically and metallurgically sound, you can always depend on Weldco.

Versatility

Youngstown Welding's plant facilities are geared to both large scale production and small quantities of odd-sized tubing. With this operating flexibility, we can produce a complete range of sizes—in the shortest possible time—to meet all your tubing needs. Weldco's versatility also gives you a choice of many different alloys—Stainless Steel, Monel, Inconel, Nickel, Cupro-Nickel, and Everdur, in sizes from 3½" to 30" O. D.

Send today for complete information on this corrosion-resistant tubing, and remember . . .

Whatever Your Needs In Tubing . . . You're Way Ahead With WELDCO

THE YOUNGSTOWN WELDING & ENGINEERING CO.
3714 OAKWOOD AVE. . . YOUNGSTOWN 9, OHIO

When inquiring check CP 6721 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

**Seals without grease,
uses liquid or dry
desiccant . . .**

small desiccator takes two No. 3 or two dozen No. 0000 crucibles

Uses: For gentle drying, conditioning, cooling of hot hygroscopic materials or samples, etc.

Features: Ground glass or metal lid is replaced in this model with an inexpensive screw lid. No sealing grease is needed.

Description: Bethlehem Dri-Jar is 3½" wide by 6⅝" high. Made of transparent glass, it uses a screw lid with hanging shelves. Each of the three shelves has a diameter of 3".



Desiccator jar showing shelves with adjustable openings

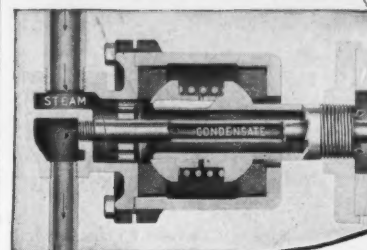
Many types of containers or samples can be handled because of the flexibility of the shelf system. Up to six shelves of either a solid or adjustable opening type can be used in one jar. This allows as many as 24 No. 0000 crucibles to be stored at one time.

Standard curved-tip tongs may be used for inserting or removing samples from the desiccator. The screw lid cannot flip off because of hot crucibles or samples. Although there is ample surface area for absorption by the desiccant, the tall, relatively narrow design of the jar reduces the chance of contamination of sample by a liquid desiccant, if used.

While the jar is small, it has a reasonable storage capacity, and large capacities can be handled by using more than one jar, since this type is less expensive than conventional dessicators.

Source: Development of Bethlehem Apparatus Company, Inc., Dept. CP, Front and Depot St., Hellertown, Pa. . . or for more information check CP 6722 on handy form, pages 2 & 3.

Trail-Blazer . . .



**JOHNSON
Rotary Pressure
JOINTS**

As a brand new approach to an old problem, the Johnson Joint introduced a form of stuffing box without stuffing, and without any need for oiling or adjusting. Years of service in the textile and paper industries have proved it unmatched for the twin tasks of boosting efficiency and slashing maintenance. Now its unusual possibilities are being utilized on rubber mills, grain dryers, rolling mills and many similar machines. If you're looking for a better way to get steam or liquids in or out of rotating machine parts, get all the facts.

Sizes and special types for all needs;
write for literature.



The Johnson Corporation

826 Wood St., Three Rivers, Mich.

When inquiring check CP 6723 on handy form, pgs. 2-3

PUT YOUR LABORATORY WORK ON WHEELS!

SAVE STEPS, TIME AND BREAKAGE with new line of 18 solidly-constructed laboratory carts by "Labconco." Glassware carts . . . portable tables . . . pan type carts . . . steel or stainless . . . 2, 3, or 4-decker carts — all of tubular one-piece weld construction with choice of surfaces — steel, compressed asbestos, stainless, etc. These carts are saving time and labor costs for Procter & Gamble, U.S.D.A., Dow Chemical Co., Armour & Co., and many others.

Put YOUR laboratory work on "Labconco" carts! Write today for new folio "Carts," LABORATORY CONSTRUCTION CO., 1111 Holmes, Kansas City, Missouri.



When inquiring check CP 6724 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

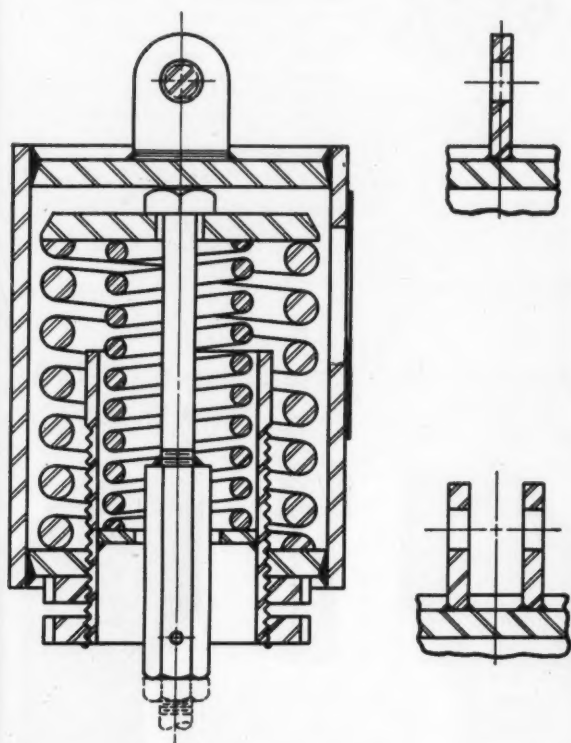
Variable supports carry piping which vibrates — without resonating . . .

double spring construction permits use without any study of the vibration to be stopped

Uses: Used for supporting steam pipes and other lines which are liable to change their position due to expansion.

Features: Springing construction of the support is so designed that any vibration of the line is well damped regardless of the frequencies or amplitudes involved.

Description: The NR Hanger owes its non-resonant characteristics to the unique use of two helical springs in parallel arrangement. The outer, or load spring, supports the entire weight of the pipe at all times; the inner, or snubber spring, functions only when vibration occurs. When the line first reaches operating temperature the



Cutaway drawing shows the parallel spring arrangement used in hanger

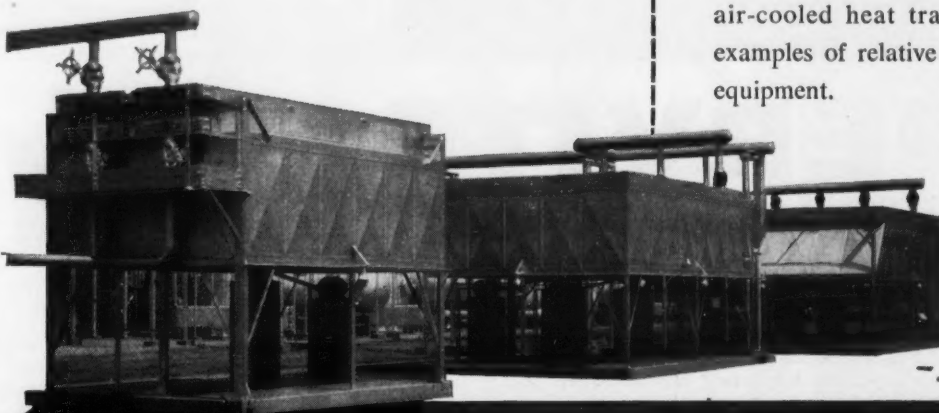
snubber is brought into position by a simple external adjustment. Normally, without vibration the snubber is unloaded. The onset of vibration causes it to be loaded intermittently, thereby changing the stiffness of the hanger with each half-cycle of vibration and preventing the development of resonance.

Various sizes are available and each size can be had in several designs to facilitate attachment to different types of support. Size and type data are given in manufacturer's Catalog 502.

Source: The NR Hanger is a development of Dept. 3, Bergen Genspring Corporation, Dept. CP, 15 Park Row, New York 17, N. Y. . . . or for more information check CP 6725 on handy form, pages 2 and 3.

Here are 15 TYPICAL APPLICATIONS for

FIN-FAN AIR-COOLED Heat Exchanger Equipment



GAS COOLING

Natural Gas After-Cooler	13,920,000	80	46' x 25'
Manufactured Gas Cooler	11,165,000	50	23' x 21'
Natural Gas After-Cooler	3,400,000	15	11' x 21'
Natural Gas Inter-Cooler	7,890,000	40	23' x 21'

VAPOR CONDENSING

Reflux Condenser	18,407,000	90	48' x 25'
Primary Condenser	4,652,000	40	11' x 25'
Still O.H. Condenser	4,875,000	34	16' x 21'
Debutanizer Condenser	11,930,000	60	23' x 25'
Still Reflux Condenser	39,110,000	60	46' x 25'
Steam Condenser	87,300,000	300	138' x 31'
Steam Condenser	2,880,000	10	10' x 6'

LIQUID COOLING

Vegetable Oil Cooler	628,000	15	6' x 17'
Absorption Oil Cooler	14,915,000	100	32' x 17'
Quenching Oil Cooler	1,665,000	50	23' x 25'
Amine Solution Cooler	19,300,000	175	38' x 25'
Stabilized Crude Cooler	125,100,000	700	315' x 25'
Jacket Water	2,400,000	5.5	16' x 12'
Jacket Water	28,800,000	100	70' x 24'

For many years, Fin-Fan Air-Cooled Heat Exchangers have proved their worth by giving reliable, economical service in many and varied applications. The Fluor Corporation, Ltd., and Griscom-Russell Company, pioneer-partners in the air-cooled heat transfer field, offer the following to show the large variety of practical applications for air-cooled heat transfer equipment and examples of relative size and duty of such equipment.

A new 8-page bulletin on Fluor-GR Fin-Fan Heat Exchangers is now being prepared. Write in and reserve your copy by post card or letter.

FLUOR

BE SURE WITH FLUOR

Why Fluor-GR Fin-Fans Lead The Field

The Fin-Fan Air-Cooled Heat Exchanger is unique in its development and manufacture. It is the result of the engineering skill of two companies, each long recognized as leaders in their respective fields. It combines Fluor's experience in the design, fabrication and field erection of air-moving sys-

tems with Griscom-Russell's experience in heat transfer.

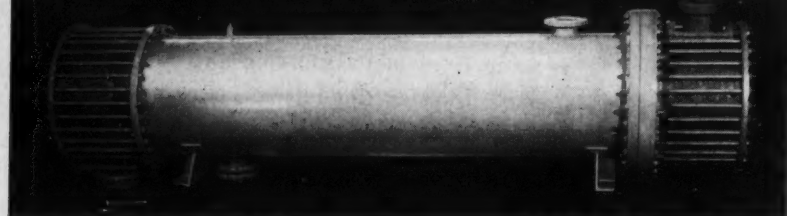
Success is evident in repeat orders. Since 1941, hundreds of Fluor-GR Air-Cooled Heat Exchangers have been installed throughout the world. . . . nearly 50% have been repeat orders!

ENGINEERS • CONSTRUCTORS • MANUFACTURERS

THE FLUOR CORPORATION, LTD., 2500 S. Atlantic Blvd., Los Angeles 22, Calif., Offices in principal cities in the United States
REPRESENTED IN THE STERLING AREAS BY: Head Wrightson Processes Ltd., Teesdale House, Baltic Street, London, E.C.I., England

When inquiring check CP 6726 on handy form, pgs. 2-3

Permanently Impervious to HCL or Equivalents



IMPERVITE

HEAT EXCHANGERS — ABSORBERS

Even such a tough corrosive as Hydrochloric Acid will not break down the resistance of Impervite, made from graphite impregnated with special-formula resins developed exclusively by Falls Industries. Typical of the many types of heat exchangers made by Falls from Impervite is the 158-tube horizontal tube-and-shell unit shown above. Also: 7, 14, and 24-tube stock units or special designs up to 222 tubes. Impervite absorbers for processing gasses from 40% to 100% HCl. Plate or immersion heaters to any capacity.

IMPERVITE TOWERS

for absorption, scrubbing, fractionation, extraction and related processing are made in five stock sizes with 12", 15", 18", 24" and 30" ID sections easily assembled to any suitable height. Sections up to 24" are monolithic cylinders machined from solid Impervite. Larger sizes are machined segments permanently cemented together. Typical 33" sections at left are top and base of special 36-foot tower.

PIPES, VALVES, FITTINGS of Impervite, all with machine threads, are available in sizes from 1/2" to 10" ID. Falls also offers chemically impervious pumps, with Impervite at all exposed points.

SEE PAGES 685 TO 688 CHEMICAL INDUSTRIES CATALOG, OR WRITE FOR IMPERVITE BULLETIN.

Falls Industries, Inc.

AURORA ROAD - SOLON, OHIO

When inquiring check CP 6727 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

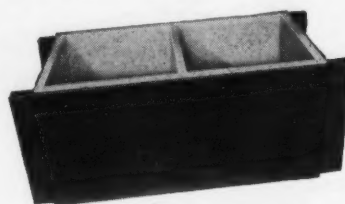
Polyethylene welding produces liners to fit tanks . . .

liners fit existing facilities and plumbing

Uses: Can be used with many corrosive liquids up to 140°F.

Features: Gives excellent corrosion resistance to specific chemicals. Can be used as a replacement for lead lining in many cases.

Description: Welded polyethylene tank liners are fabricated by a hot gas welding technique to fit into existing



Bi-sectional polyethylene tank liner

tank. In many cases they can be used to replace lead linings, saving enormously in weight. Accompanying polyethylene plumbing can be connected to standard pipe.

Source: Product of Plastics Div., American Agile Corp., 5806 Hough Ave., Cleveland 3, Ohio . . . or for more information check CP 6728 on handy form, pages 2 and 3.

Dust mask offers protection to personnel at low cost and less lost time . . .

permits free breathing and conversation with maximum comfort

Uses: Promotes labor efficiency by protecting against nuisance dusts. Not for use in atmospheres of toxic dust, silica, or fumes.

Features: Less lost production for "breathing spells", illness, etc. Masks are washable and sturdy enough for continuous use, and cost is such that they can be discarded.

Description: Mask is processed from a vegetable fiber which will not dissolve in water or live steam. Similar to a surgeon's mask, it can be autoclaved and sterilized in hot water. Material is soft in texture, porous, absorbent and free from irritating lint or yarn. Masks are finished with an elastic head band and may be used many times.

Source: Product of General Scientific Equipment Co., Dept. CP, 2700 W. Huntingdon St., Philadelphia 32, Pa. . . . or for more information check CP 6729 on handy form, pages 2 & 3.

Filtering
Grading
Cleaning
Straining

CORROSIVE-PROOF!

H & K PERFORATED MATERIALS

You have an extra guarantee of product purity and uniformity when you specify H & K Perforated. Stainless steel and other corrosive-resisting alloys are a specialty with us. Without delay, we can supply smooth, easy to clean surfaces, perforated to accurate, uniform, close tolerances . . . in the pattern most accurately suiting your needs. Unlimited patterns of perforated metals, rubber, plastic, etc., in gauges from tissue thickness to equivalent of 1" steel plate. Delivered in flat sheets, rolled, sheared, welded, brazed—or otherwise prefabricated to specification. "H & K Perforated" means clean, careful processing!

For full details — Write today for H & K Catalog No. 62, free on request.

**The Harrington & King
PERFORATING CO.**

5636 Fillmore St., Chicago 44, Ill.
114 Liberty St., New York 6, N. Y.

When inquiring check CP 6730 on handy form, pgs. 2-3

Aurora Vertical Sump Pumps are "TOPS"

HEAVY DUTY
and LIGHT DUTY

ALSO NON-CLOG
SIZES UP TO 8"

PUMPS
"by Aurora"

For all sump drainage; liquids handling in industry; transfer of chemical and hot liquids; handling viscous or high temperature liquids; boiler blow-off; heating returns etc.; also for handling screened and unscreened sewage and industrial waste.

Write for
BULLETIN 104
(Heavy Duty & Non Clog)
BULLETIN 103
(Light Duty)

Write TODAY
for
CONDENSED
CATALOG "M"

DISTRIBUTORS IN PRINCIPAL CITIES

AURORA
Always
PUMPS

AURORA
PUMP COMPANY

62 Loucks Street, Aurora, Illinois

When inquiring check CP 6731 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

Changes to selenium rectifier to simplify design, extend life . . .

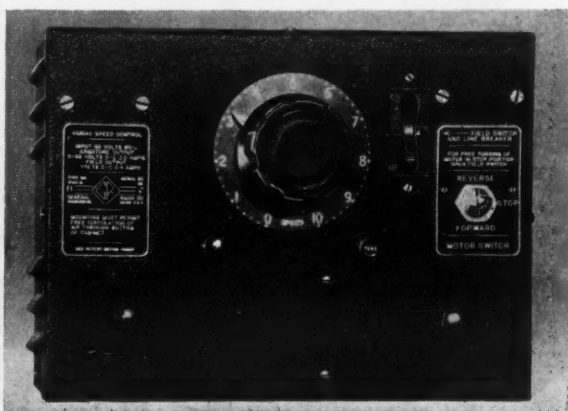
motor control unit has indefinitely long life expectancy; offers several advantages

Uses: Speed control of 1/3 hp DC motors.

Features: Tubes in bridge rectifiers have been replaced with selenium rectifiers. This allows starting without a warm-up period and short duration high overloads. At the same time construction is simpler, more rugged, and expected to last longer.

Description: Variac speed control is a rectifying unit with a variable output. Taking its power from a standard 110 v 60 cps line, this circuit will supply and control a 1/3 hp DC motor from rated speed down to zero. Speed rise between full load and no load is the same (about 400 rpm) regardless of control setting.

Device consists of a Variac autotransformer supplying the armature through a bridge type selenium rectifier and a second bridge for the field which takes its power from an



Panel of speed control

isolating transformer. A three-position switch allows forward or reverse motion of the armature, or dynamic braking. When dynamic braking is not desirable, the motor can coast to a stop if the unit itself is switched off.

Source: Type 1700-B Variac Speed Control, embodying selenium rectifiers, is a product of General Radio Company, Dept. CP, 275 Massachusetts Ave., Cambridge 39, Mass. . . . or for more information check CP 6732 on handy form, pages 2 and 3.

Features capacity chart for steam traps

Two-color, twelve-page bulletin gives construction details and dimensions of side and bottom inlet, cast semi-steel traps for pressures up to 250 psig; forged steel traps for pressures up to 1500 psig; compound steam traps for pressures up to 600 psig; and, ball float air traps, for pressures up to 1000 psig. Two pages of data contain eight tables for calculation of volume of condensate and selection of traps to handle these loads. Bulletin features, "Steam Trap Capacity Chart", which shows trap capacities using maximum diameter orifices at differential pressures through trap, of 1 to 1500 psi. "Armstrong Steam Traps" is issued by Armstrong Machine Works, Dept. CP, 213 Maple St., Three Rivers, Mich. When inquiring specify CP 6733 on handy form, pages 2 and 3.

Industry's Most Versatile Heat Source

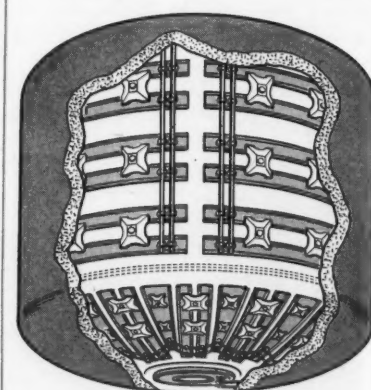
Chromalox Electric Strip Heaters



Easy to Install

CHROMALOX Electric Strip Heaters give clean, dependable and accurately controlled heat where and when heat is needed. They produce uniform and accurate temperatures by automatic or manual controls. Low initial costs, low installation costs and low operating costs are among the many advantages of using CHROMALOX Strip Heaters for heating liquids, gases, viscous fluids, tanks, platens, molds, moving parts, etc. Get the full details now.

A Typical Strip Heater Application from Our Files



Rugged, easily installed Chromalox Strip Heaters assure accurate temperature, dependable around-the-clock service.

Strip Heaters curved slightly as installed conform to shape of convex kettle bottom, while . . .

Strip Heaters curved lengthwise at the factory fit snugly to tank perimeter and . . .



Segment Heaters fill the gaps.

CHROMALOX

Electric Heat for Modern Industry

When inquiring check CP 6734 on handy form, pgs. 2-3

Sizes, Types and Sheaths for Every Need

LENGTHS

4" to 96" lengths, 1" to 2 1/2" widths, rings 2 1/2" to 11" diameter, 115 to 460 volts.

CURVES & SEGMENTS

Curved in cross-section or formed lengthwise to desired radii.

TERMINALS

Varied terminal types for convenient wiring. 2 terminals at one end, centered, or at opposite ends; 3 terminals at same end of the unit.

SHEATHS

Rust-resisting iron, high temperature steel and Monel sheaths to meet exact service conditions.



Want Ideas?

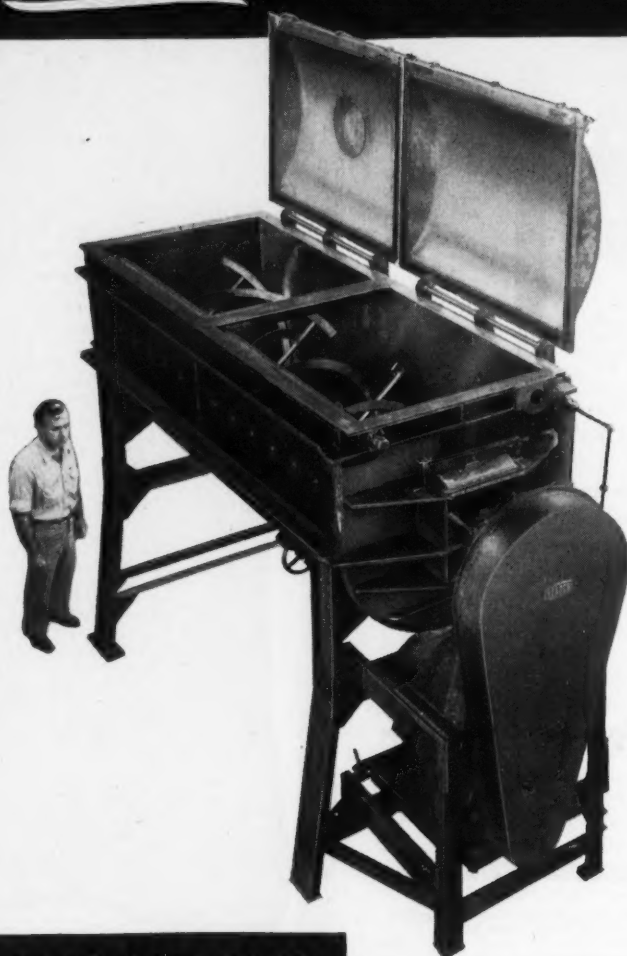
on how to use Chromalox Electric Heaters in your plant



Write for the data-packed Catalog 50 which describes many types of Chromalox Electric Heaters and how to apply them. It's yours without obligation.

EDWIN L. WIEGAND COMPANY
7517 Thomas Blvd., Pittsburgh 8, Pa.

VACUUM PROTECTION for your VOLUME PRODUCTION



READ STANDARD

CORPORATION

Readco Spiral Ribbon Vacuum Mixers enable you to avoid undesirable oxidation ... to recover solvents and evaporate moisture from large batches without the excessive, detrimental temperatures necessary under atmospheric conditions.

The single packing gland construction of Readco Vacuum Spiral Ribbon Mixers necessitates sealing against vacuum only where the drive shaft enters the vacuum chamber. Lubricant cannot possibly enter the mixing chamber.

No pressure differential exists across the quickly removable split seals.

A quickly opened, flush-plug discharge gate prevents accumulation of dead volume. Single or divided jackets provide a wide range of temperature control. Bakery-Chemical Division, YORK, PENNSYLVANIA; LOS ANGELES, CALIFORNIA.

When inquiring check CP 6735 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

For high pressure service — small forged steel gate valves . . .

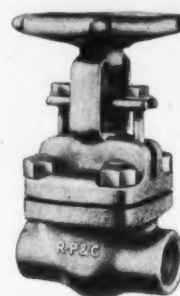
available with screwed or socket weld ends and range in weight from 2½ to 25 pounds

Uses: In high pressure and temperature field, being able to withstand 1000°F with 380 pounds-non-shock.

Features: Handwheel is of forged steel to withstand rough usage. Stainless steel gland bolts and nuts prevent freezing or corrosion. Two-piece gland and follower applies uniform pressure on packing and will not bind on stem.

Description: Body and bonnet are made of forged carbon steel; trim of 12-14% chromium steel; and, disc is heat treated and hard chromium plated. A bolted bonnet is used to insure maximum service life and low maintenance cost, and extremely hard wedge facing to minimize seizing, galling and abrasive wear. Valve is available in sizes of ¼, ⅜, ½, ¾, 1, 1-¼, 1-½, and 2 inch. Bonnet studs are heat treated to add strength to the bonnet joint.

Source: R-P & C Valve Div., American Chain & Cable Co., Inc., Dept. CP, Bridgeport 2, Conn. . . or for more information check CP 6736 on handy form, pages 2 and 3.



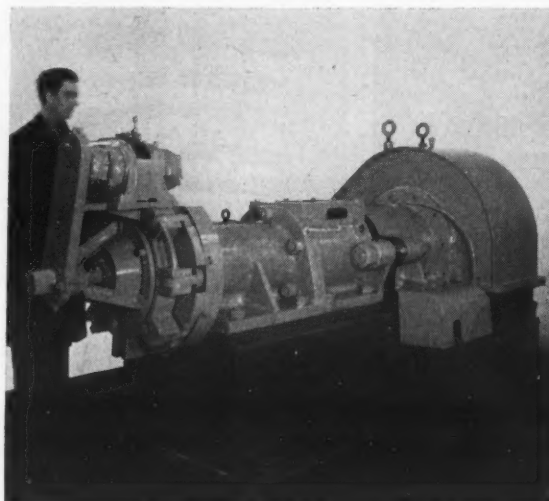
Extruding machine designed for pelletizing clay . . .

screw diameters range in size from 6 to 20 inches

Uses: Pellets made by 6-inch extruder are used in production of high octane gasoline and other petroleum products.

Features: Specially designed screw is contained in a steel cylinder.

Description: Extruding machine has screw which is bored for coolant circulation. Cylinder is lined and jacketed and has a hinged head at the discharge end which



Sturdy, screw-type clay pelletizer

supports the pelletizing die and cut-off mechanism. Drive is by electric motor through a double reduction gear, and



Why You Get Longer Service Life From PYROFLEX EQUIPMENT

The workmen above are heat-bonding PYROFLEX thermoplastic corrosion-proof sheet lining to the steel shell of a pickling tank. The mason (below) is setting the first of two courses of acid-proof brick in KNIGHT acid-proof cement over the sheet lining. The finished unit will be fully corrosion-proof to any type or combination of corrosives for which it was designed.

Many different types of linings and construction are used in PYROFLEX Constructed Units depending on type of service. Each unit is designed to meet the needs of the individual situation. PYROFLEX Constructions include:

**Acid Tanks
Fume Ducts
Brick Floors
Rinse Tanks
Acid Sewers
Plating Tanks
Pickling Tanks
Fume Scrubbers
Neutralizing Basins**

Write for Bulletin No. 2-D —
PYROFLEX Construction.



MAURICE A. KNIGHT
409 Kelly Ave., Akron 9, Ohio

Acid and Alkali-proof Chemical Equipment

When inquiring check CP 6737
on handy form, pgs. 2-3

CHEMICAL PROCESSING

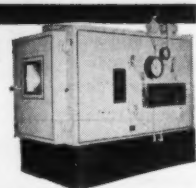
TEMPERATURES?
ATMOSPHERES?
PRESSURES?

for the
finest in
Test Chambers

TEST WITH Tenney

Tenney has combined years of specialized experience with the most advanced engineering methods. Results have convinced industry that Tenney testing equipment is the finest available. For complete confidence, specify Tenney.

TENNEYSPHERE ALTITUDE CHAMBERS

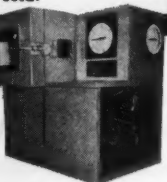


Designed to withstand atmospheric pressure and to simulate global conditions of pressures, temperatures and humidities. Altitudes from sea level to approx. 75,000 ft. Temperature range from plus 200°F to minus 100°F. Also simulates desired relative humidity.

TENNEY SERVO UNIT

Portable air conditioning unit which may easily be attached to various types of laboratory enclosures—impact machines; tension machines; torsion testers; cold boxes and similar equipment. Through its use, articles undergoing testing, aging or weathering can be subjected to wide variations of humidity, heat and cold.

TENNEY TEMPERATURE AND HUMIDITY CHAMBER



Designed for positive control of temperature, humidity and air circulation. Permits the accurate checking of physical quality, fragility, tension and other factors.

TENNEY SUB-ARCTIC INDUSTRIAL CABINETS

Designed for low-temperature testing of metals, radios, instruments, plastics, liquids, chemicals and pharmaceuticals. Temperature ranges of -40°F, -60°F, -95°F and -150°F are standard for each size.

For further information on these and other Tenney test equipment, write to Tenney Engineering, Inc. Dept. T, 26 Avenue B, Newark 5, New Jersey.

Tenney

Engineers and Manufacturers of Automatic Temperature, Humidity and Pressure Control Equipment

When inquiring check CP 6738 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

the arrangement of the entire assembly is compact and convenient for operation and maintenance.

Source: Available from Farrel-Birmingham Co., Inc., Dept. CP, Ansonia, Conn. . . or for more information check CP 6739 on handy form, pages 2 and 3.

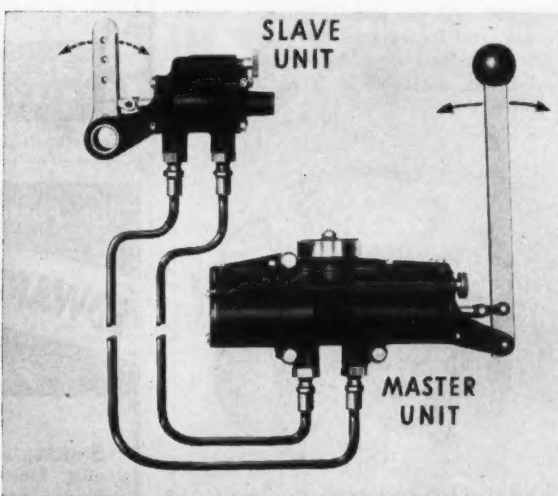
Use of hydraulic principle in remote control system eliminates backlash . . .

compact remote unit follows accurately with torque up to 500 inch-pounds

Uses: Ability of the unit to transmit power makes it useful in many fields. Machine tools, test stands, drill rigs, power plants, steel mills, processing equipment and many other applications have been found.

Features: Slave unit duplicates setting on master unit in either direction of travel — even when loaded to 500 inch-pounds of torque — without backlash.

Description: System consists of a master unit and slave unit. Motion applied to master unit's lever arm results in equal motion at the arm of slave unit. The system is entirely hydraulic with no springs or valves. As shown in illustration, the sole connection between the units are



Master and slave units are connected by two tubes. Positive action is possible in either direction

the two tubes which may be bent to go around obstacles. Either unit may be mounted as a fixed or movable member in any position without impairing operation. The design of the system has taken into account expansion and contraction of both the oil and metal parts so that no change of setting is experienced as the temperature changes.

The hydraulic system, with its minimum of moving and wearing parts, eliminates the need for rod, gears or cables and hence eliminates the backlash which many conventional systems develop. In operation it gives smooth transmission and shows great rigidity under load. These characteristics make it ideal for throttles and other controls. At present only the 500 inch-pound unit is available, but other sizes will be available soon.

Source: Superdrastic Remote Control is a product of Superdrastic Corporation, Dept. CP, 14256 Wyoming Ave., Detroit 4, Mich. . . or for more information check CP 6740 on handy form, pages 2 and 3.

It pays to
GENERATE
your own
INERTS

Model 60 AMHE is ideal for nitrogen bubbling and blanketing in synthetic resin plants . . . delivers 6000 cfh

Model 60 AMHE produces 60,000 cfh . . . is widely used for purging and blanketing in the petroleum industry.

Kemp Inert Gas Generators Save \$9 of the \$10 you now spend for Inerts

Need inerts for purging, fire protection, mixing, blanketing or a special application? You can save up to 90% on Inert Gas costs when you generate your own inerts with a Kemp Inert Gas Producer. The cost of transportation, bottle juggling, storage, deposits on cylinder inventories and the initial higher cost of bottled nitrogen or CO₂ is eliminated.

ABSOLUTELY DEPENDABLE

No matter what the demand, Kemp Inert Gas Generators give you the same analysis Inert Gas from 20% to 100% of capacity. The Kemp Industrial Carburetor, part of each installation, burns ordinary gas just as it comes from the mains. Assures complete com-

bustion without "tinkering." Produces a clean, chemically inert gas to meet your most exacting requirements.

SEND FOR DATA

Whatever your requirements, always specify Kemp. To find out how you can benefit: Tell us your atmosphere gas problem, and we'll show you how Kemp can solve it and save you money!

KEMP
OF BALTIMORE

INERT GAS GENERATORS

Write for Bulletin I-10 for technical information C. M. KEMP MFG. CO. 405 E. Oliver St., Baltimore 2, Md.

When inquiring check CP 6741 on handy form, pgs. 2-3



*Management
and workers agree*

DUSTUBE®

DUST COLLECTION

*is a **NECESSITY** for profitable operation*

**at the Socony Paint Products Co.,
Metuchen, New Jersey**

A complete Dustube Collector system ventilates all paint pigment grinding and mixing operations in the new plant of Socony Paint Products Co., large producers of industrial and marine paint products. Without the Dustube, with its virtually 100% collection efficiency, the dust in the mill loading room would be intolerable, forcing workers to wear respirators.

"The Dustube has made our operations so much healthier and cleaner," says Mr. G. J. Wrasman, Production Manager, "that it is indispensable from the standpoint of improved working conditions." An improved purity of color in the finished paints has also resulted since contamination of one mixer by the dust of another is eliminated.

The high efficiency and low operating cost of the Dustube is improving working conditions and saving money for manufacturers in all types of industry. Whenever you have a dust problem, it will pay you to investigate the cost-saving advantages of the Dustube.

*Send for full details
today.*



American dustube
WHEELABRATOR & EQUIPMENT CORP. COLLECTORS

478 S. Byrkit St.

9

Mishawaka 12, Indiana

When inquiring check CP 6742 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

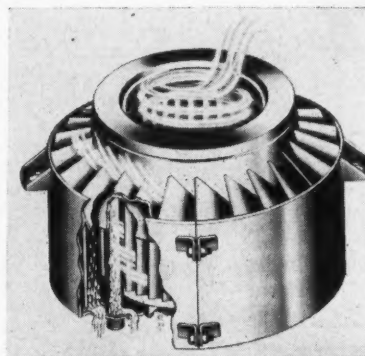
**Removes 1.0 ppm or less
total solids from
steam vapor . . .**

uses no moving parts or auxiliary baffling

Uses: Purifier is of internal type and has applications inside steam drums, flash tanks, evaporators, packed towers, bubble-cap towers, deodorizers and stills.

Features: Advantages reported for purifier are elimination of operating, maintenance and replacement costs. The design provides for a self-cleaning action which eliminates maintenance, and the need for baffling in boilers and drums. Further advantages cited are low pressure drop occupied inside a drum, receiver, or similar equipment.

Description: Purifiers are available in fabricated steel, stainless steels and other alloy materials. Sizes 4" through 10" are designed to pass through standard 10" x 16" and 11" x 15" elliptical manholes; sizes 12" through 36" for standard round manholes; and larger sizes 39" to 72" are also furnished upon application. In operation, entrainment is removed in



Internal type purifier

three stages. Entrainment laden vapor enters top of the purifier as far away from the liquid level as possible and passes down through purifier in a rotary motion.

Action develops centrifugal force, which removes greater portion of entrainment. In second stage, rapid rotation is reduced to slow linear flow causing additional entrainment to drop out. Further centrifugal force is developed in last stage to effect practically complete removal of any remaining entrainment before vapor continues up and out the evaporator outlet.

Source: V. D. Anderson Co., Dept. CP, 1935 W. 96th St., Cleveland 2, Ohio . . . or for more information check CP 6743 on handy form, pages 2 and 3.

Hotpack

DRYING OVENS

**MECHANICALLY
CONVECTED**

**Designed—Sold
and Serviced**

**by Engineers for
your specific needs.**

Hotpack offers the standard high temperature oven, and also a complete line with a built-in Trip-lex, heat resisting, full view window. Also ovens with explosion proof safety features. Standard sizes are from 2 to 50 cubic feet working space.



Hotpack Features Assure You the Best Results

- Limit stat control.
- Accurate, mercury angle type thermometer, built into the front of the cabinet for convenient and easy reading of the chamber temperature.
- Controls conveniently located on the front panel.
- Floor space is reduced to a minimum.
- Working chamber is at a convenient height.
- Ball bearing motor, silent in operation and requiring no oiling or greasing, powers the built-in blower.
- All internal, exposed surfaces including the solid shelves are stainless steel.
- Shipped ready for immediate operation.

Write for catalog and complete information



THE ELECTRIC Hotpack CO. INC.
5033 COTTMAN AVE. • PHILA. 35, PENNA.

When inquiring check CP 6744 on handy form, pgs. 2-3

For Faster, Smoother Painting

EDWARD E. ROBINSON
**MASTER
PAINTER BRUSHES**

SPEED up maintenance or production painting by using Robinson's **TIPPED** nylon Master Painter Brushes. Every nylon filament is **TIPPED** on Robinson's newly developed nylon **TIPPING** machine assuring superior paint pick up and smoother, faster lay down by every Robinson **TIPPED** Nylon Master Painter brush.

Robinson's Master Painter Brushes made of Pure Bristle, Bristle-horse-hair, or **TIPPED** Nylon, mixed to performance proved formulas are available through Distributors, Paint and Oil Dealers and Hardware stores. Catalogue mailed on request.



EDWARD E. ROBINSON
INCORPORATED
95 PARK AVENUE • NUTLEY 10, N. J.

When inquiring check CP 6745 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

Solidly plugged heater tubes opened quickly with rotary cleaner . . .

powered by compressed air, carbide bit revolves at 3500 rpm — uses air or water for cooling

Uses: Cleaner is used for removing sludge and scale from tubes of heat exchangers, pre-heaters, condensers or other equipment having straight tubes.

Features: Very powerful, high speed action of carbide bit gets through even hard, solid scale plugs.

Description: Powered by compressed air, the Model TP-301 cleaner operates at 3500 rpm at 90 psi using 130 cfm. It is suitable for vertical or horizontal use on tubes from $\frac{3}{8}$ to 2- $\frac{1}{2}$ " OD and up to 40 ft long. Cutting bit is carried on hollow shaft available in one piece 20 ft long or in sectional threaded lengths. This hollow shaft brings air or water to the bit for cooling and carrying away debris. Minimum practical working headroom is 5 ft.



For long tubes or whenever desirable, a cable support may be attached to the rig through an eye in the top of the power unit. A variety of carbide bits and brushes of various sizes is also available for use with this unit.

Source: Cleaner is one of a number of similar units developed by Thomas C. Wilson, Inc., Dept. CP, Wilson Bldg., 21-11 44th Ave., Long Island City 1, N. Y. . . . or for more information check CP 6746 on handy form, pages 2 and 3.

Protects power tools from dripping, dust, etc. . . .

waterproof plastic cover houses machinery which is standing idle, or in storage

Uses: While it can be used for all sorts of objects, the cover was intended especially for machine shop power tools.

Features: Made of waterproof plastic.

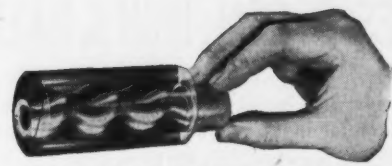
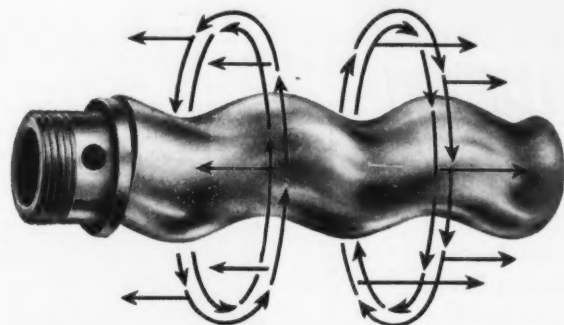
Description: Made of maroon plastic, the covers are machine-stitched with bound edges. Used on any idle machine, they reduce damage caused by moisture or grit. Available sizes are: 12 x 28 x 28"; 21 x 37 x 24"; 32 x 48 x 17"; 32 x 60 x 17"; 38 x 72 x 25"; and 38 x 96 x 25".

Source: A product of South Bend Lathe Works, Dept. CP, South Bend 22, Ind. . . . or for more information check CP 6747 on handy form, pages 2 and 3.

Steam trap selector tables for process equipment

Process and industrial equipment is listed alphabetically in 20-page bulletin. Steam trap selector tables are given for each type showing trap capacities in terms relative to the equipment and for operating conditions normally encountered. Proper size of trap is read directly from the table. Tables are based on pressure at the trap inlet in psig, and factors of safety are included in the tabulations. Bulletin T-1740 is issued by Yarnall-Waring Co., Dept. CP, 125 Mermaid Ave., Philadelphia 18, Pa. When inquiring specify CP 6748 on handy form, pages 2 and 3.

HERE'S A FEATURE THAT MAY SAVE YOU TIME AND MONEY:



THE ROTOR-STATOR PUMPING ELEMENT does all the work—takes all the wear —is easily replaceable.

It's Reversible!

• You may never need a reversible pump, but then again you might, and it's good to know that R & M Moynos pump *either way* equally well. With Moynos, there's no wrong direction; no change in capacity or efficiency; *no effect whatever* on amazing ability to handle virtually anything that will push through a pipe—liquids, slurries, pastes.

Moynos reverse *merely* by reversing rotation. Pumping action starts the instant pump starts. Flow is constant, uniform, steady. Thousands of Moynos in daily use are doing the "impossible." Let us show *you* what Moynos can do.

SEE HOW SIMPLE!

Bearings are completely isolated from pumping compartment. Lubricant can't contaminate or be contaminated.



CALL IN YOUR "MOYNO MAN" TODAY or write for free Bulletin C-30-P

ROBBINS & MYERS • INC.

SPRINGFIELD 99, OHIO • BRANTFORD, ONTARIO

MOTORS • HOISTS • CRANES • FANS • MOYNO PUMPS

YOU GET MANY OTHER FINE FEATURES IN THIS VERSATILE, CAPABLE PUMP

Moynos have no pistons to stick; no troublesome valves; no churning impellers. A helical rotor is the only moving part.

NO OTHER PUMP LIKE THIS

Progressing-cavity action, with its positive displacement and pressure, self-primers with nearly perfect vacuum; delivers positive pressure to 1000 p.s.i. without pulsation; meters flow; won't vapor-lock or cavitate.

TALK OF THE TRADE

Moynos work where other pumps won't—on liquids, heavy slurries, non-pourable pastes. They resist abrasives and chemicals, pass particles and solids in suspension, stand up on tough jobs.

When inquiring check CP 6749 on handy form, pgs. 2-3

Half a Million More Tons of Steel a Year

for Customers of
Birmingham's

TENNESSEE COAL, IRON & RAILROAD COMPANY



T.C.I.—the South's largest steel producer—is now increasing the annual ingot capacity of its Birmingham steel mills from 2,850,000 tons to 3,350,000 tons. This company is also increasing the production of its nearby Fairfield sheet mill to meet the great demand for such galvanized steel products as roofing and siding. At Mobile, Alabama, it is building an extensive iron ore handling terminal which will serve as a transfer point for high grade imported ores.

Announcing these major developments, Arthur V. Wiebel, president of the company, said:

"Since the start of World War II, our steel mills in Birmingham have been operating in excess of rated capacity to meet the growing demand in our Southern market for all kinds of finished steel products. More than 200 products are produced in our sheet mill, wire mill, bar mill, hoop mill, tin mill, plate mill, structural mill and rail mill.

"In the Birmingham district and other sections of the flourishing South, many steel-using plants have located in the past decade. Others have greatly broadened operations.

"Our company has voiced its belief in the continued growth trend of industry in the Birmingham district and its market area by undertaking at this time the largest expansion in its recent history."



The Committee of 100 or any of the undersigned members of the Executive Committee will welcome the opportunity to give you confidential and specific data regarding the advantages of the Birmingham district for your plant, office or warehouse.

BIRMINGHAM COMMITTEE OF 100

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President
Tennessee Coal,
Iron & Railroad Co.

When inquiring check CP 6750 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

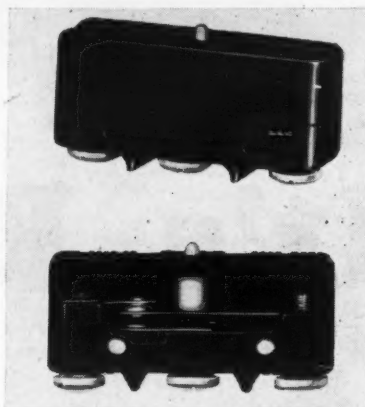
**Spring limit switch
handles 20 amp
without bounce . . .**

action is immediate when operating stud is depressed

Uses: Medium duty switch handles 20 amp at 125 v AC, non-inductive loads. Action is single pole, double throw.

Features: Has immediate action when stud is depressed to proper depth as is inherent in spring return switches.

Description: As a direct-acting switch, the du.op has no inherent characteristics of bounce. Loss of mechanical motion and consequent delay of contact is eliminated because instantaneous contact is made at the same fixed point of repetitive plunger



Compact switch has same 1" mounting as snap-action switches

travel. This centrally located plunger, or stud, permits easier cam design and acts directly on the long contact spring to insure change of contact position with maximum contact pressure.

The du.op is enclosed in a compact phenolic-molded housing which has the same 1" mounting dimensions as snap-action switches, plus other mounting provisions. Heavy, evenly spaced terminals are separated by barriers of the plastic.

Source: General Control Company, Dept. CP, Boston 34, Mass., is the maker . . . or for more information check CP 6751 on handy form, pages 2 and 3.

Sheet packing shown

Eight-page, two-color bulletin lists, illustrates and describes sheet packings of asbestos and fiber. Twelve types are shown with specifications. "Asbestos and Fibre Sheet Packings" is issued by Packing Div., Raybestos-Manhattan, Inc., Dept. CP, Manheim, Pa. When inquiring specify CP 6752 on handy form, pages 2 and 3.

For pumping acids, caustics, slurries, viscous liquids, specify...

JABSCO Corrosion Resistant PUMPS

Patented
and Pat.
Pend.



SELF PRIMING. Obtains vacuum in excess of 26".

VERSATILE. Handles variety of liquids and slurries at wide range of speeds.

SAFE. Self-priming feature permits cleaner, safer, more accessible installations.

SIMPLE. Easily and quickly disassembled for cleaning.

TROUBLE FREE. Impeller lubricated by liquid pumped. No oil or grease cups. No packing. No metal to metal contact of moving parts. Ball Bearings.

MORE CAPACITY for its size and price than any other type of pump. Capacities up to 56 GPM.

FLEXIBLE IMPELLER. Odorless, tasteless, non-toxic corrosion resistant neoprene—also gum rubber if specified.

Stainless Steel Models available in 3/4", 1", 1 1/2" port sizes.
Bronze Models available in 1/4" up to 1 1/4" port sizes.
Cast Iron Models available in 1", 1 1/4" port sizes.

JABSCO PUMP COMPANY
2031 LINCOLN STREET • BURBANK, CALIFORNIA

When inquiring check CP 6753 on handy form, pgs. 2-3

ARCOS Low Hydrogen Electrodes Weld High Tensile Steels

- Without Preheating
- Free of Underbead Cracks



HI-STEEL
United States Steel Co.
Inland Steel Co.

YOLOY
Youngstown Sheet & Tube Co.

NAX
LOW-ALLOY STEELS
Great Lakes Steel Corp.

MAYAR
Bethlehem Steel Co.

AW DYNALLOY
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U-S COR-TEN
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OTISCOLOY
Jones & Laughlin Steel Corp.

REPUBLIC ALDECOR
Republic Steel Corp.

As well as other low alloy steels of similar analysis

For more information request • Booklet
—ABC's of Welding High Tensile Steels
• Selector Chart 9501—Welding Trade
Named Steels.

for "peace of mind"

WELD WITH

ARCOS CORPORATION
1500 South Fifth St., Phila. 43, Pa.

Stainless, Low Hydrogen and Non-Ferrous Electrodes

When inquiring check CP 6754 on handy form, pgs. 2-3

CHEMICAL PROCESSING



**Provides wide speed variations
for low speed machinery . . .**

uses 7" and 8" combination sheaves and is available for drives from 2 to 15 hp

Uses: For installations where driven shaft speeds must be lower than motor shaft speeds.

Features: Complete assembly with combination sheaves may be used, or parts of the assembly may be combined into other types of drives. Various parts can be assembled as (1) a sliding motor base only; (2) a sliding countershaft base; (3) a fixed-center countershaft drive for ratios up to 8:1; or (4) a compound variable drive with speed changes up to 64:1.

Description: Assembly consists of a sealed ball-bearing countershaft stand, secured by rigid slide rods to an adjustable motor support for all motor sizes up to NEMA



#326. Built-in control can be mounted in any one of a number of positions to suit the requirements of the installation.

Source: Manufactured by Speed Selector Inc., Dept. CP, 118 Noble Court, Cleveland 13, Ohio. . . or for more information check CP 6755 on handy form, pages 2 and 3.

**Centrifuge construction,
operation explained**

Three-color, 23-page booklet pictures and explains the construction and operational features of high-speed centrifugal extractors for industrial use. Each constructional assembly is covered separately and illustrated with line drawings and photographs. Accessory equipment is also explained. Among the latter is a unit for holding unloading speed constant for efficiency and operator safety. This device is operated by a centrifugal mercury switch and can be set for any desired speed. A feature of the booklet is a semi-log plot giving the rpm necessary to attain a desired acceleration between 25 and 1500 g with any rotor diameter from 10 to 75".

"Modern High-speed Centrifugals" is issued by Fletcher Works, Dept. CP, Glenwood Ave. and Second St., Philadelphia, Pa. When inquiring specify CP 6756 on handy form, pages 2 and 3.

puts the HEAT on heat exchangers



ACTUAL SIZE 1/4" YARWAY STEAM TRAP

YARNALL-WARING COMPANY
125 Mermaid Ave., Philadelphia 18, Pa.

By changing to Yarway Impulse Steam Traps, an oil refinery reports much hotter steam in their heat exchangers — plus two other important extras:

- (1) They were able to operate the plant with 6 boilers instead of the 8 formerly required.
- (2) Three men formerly required to service old-type traps can now be used for productive work.

Significant sidelight—these Yarway traps are operating under severe conditions, many outdoors with temperatures often below zero.

Plant after plant is standardizing on Yarway Impulse Steam Traps because Yarways are designed to deliver the most premium B.T.U.'s at top temperatures into your process or product. **They get equipment hotter, sooner . . . and keep it hot.**

Other reasons—small size, easy installation, good for all pressures, only one moving part, low maintenance, low price.

Buy your Yarway Impulse Steam Traps from the nearest of 216 distributors. For name, write us.

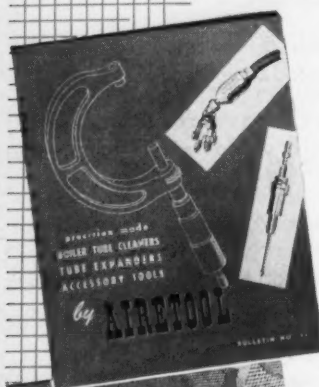
FREE OFFER. Don't take our word for it. Test Yarway's advantages in your own plant, without cost or obligation. Drop us a card or letter—a trial trap will be delivered promptly.

YARWAY

the steam trap
designed with more production in mind

When inquiring check CP 6757 on handy form, pgs. 2-3

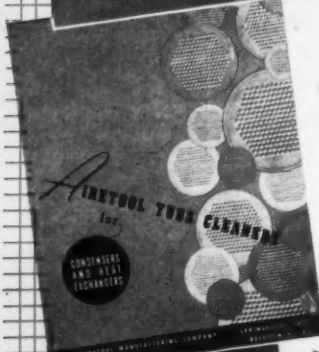
IS THIS HELPFUL INFORMATION AT YOUR FINGER TIPS?



If you use tube maintenance tools, cleaners, expanders, accessory tools, or are in any way connected with their purchase, you should become thoroughly familiar with the contents of these AIRETOOL bulletins:

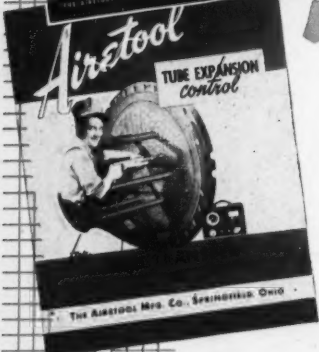
Bulletin 44

Helps you select the **RIGHT** cleaners and expanders for best results in straight and curved tubes.



Bulletin 40

Get the facts about how specially designed lightweight cleaners safely remove scale from condenser and heat exchanger tubes.



Bulletin 47

Tubes can now be rolled to amazing accuracy and with **TWICE** the speed by means of this new control fully described in this bulletin.

The handy tools described in these bulletins will reduce your downtime and increase your profits. To obtain your free copies of these colorful bulletins, write The AIRETOOL Mfg. Co., 331 S. Center St., Springfield, Ohio.

There's an AIRETOOL Tube Cleaner and Tube Expander for Every Type of Tubular Construction.



Branch Offices: New York, Philadelphia, Chicago, Tulsa, Baton Rouge, Houston

PROCESSING EQUIPMENT

Dishwasher handles petri dishes, pipettes and slides as well as other lab glassware . . .

continuous action, once loaded, frees operator for other tasks

Uses: Washes laboratory glassware, delivering it chemically clean.

Features: Once loaded, the operation is entirely automatic.

Description: Operator loads the proper size basket, attaches lid and places basket on the drum. The drum carries the basket into the washing solution and lifts it out again to drain. This is done, ferris-wheel fashion; at 9 rpm. In addition, there are numerous small jets at one end of the tank. These admit hot, cold and warm water.



Glassware being loaded into baskets for washing

In one model, live steam can also be shot in. Plugged drains can be cleaned from the front of the cabinet and broken glass taken out through a removable panel at the bottom of the tank.

Two models are available, a steam-heated unit operating on either 115 or 230 v AC, and an electrical unit which operates on 230 v AC. The steam model makes use of 5 to 30 psi steam as a temperature control and drying aid. Water temperature in the electric model is controlled by a heater whose low water safety cut-off switch automatically eliminates the possibility of element burn-out. A variety of baskets can be obtained separately to accommodate standard lab items including petri dishes, microscope slides, culture flasks, and others.

Source: Product of Fisher Scientific Co., Dept. CP, 717 Forbes St., Pittsburgh 19, Pa. . . . or for more information check CP 6759 on handy form, pages 2 and 3.

**Supplies large quantities
hi-pressure dry steam
in short period . . .**

develops 200 lb steam pressure in 2 min from 50° water and produces 4800 lb of 99% dry steam/hr

Uses: Construction — pile drivers, hoists; chemical processing plants — steam for drying on steam heated rollers or in ovens; plastics industry — 150 to 300 psi steam pressure for injector machines; laundry field — heating wash water, steam presses; distilling sea water —

Smooth Vibrationless PROPELLERS

for MIXING, STIRRING
AERATING, PUMPING
AGITATION



A Michigan 34" Stainless Steel propeller with split hub for mounting in receptacle through manhole.

Manufactured by an exclusive process, Michigan propellers are perfectly balanced to avoid whip and strain on shafts. They are available for original equipment, replacement or special application in a wide range of materials and in sizes up to 60". Write for latest data folder.

MICHIGAN WHEEL CO.
GRAND RAPIDS 3, MICHIGAN

When inquiring check CP 6760 on handy form, pgs. 2-3

**SPRACO
NOZZLES**

Write for NOZZLE CATALOG to
SPRAY ENGINEERING CO.
125 CENTRAL STREET • SOMERVILLE 45, MASS.

When inquiring check CP 6761 on handy form, pgs. 2-3

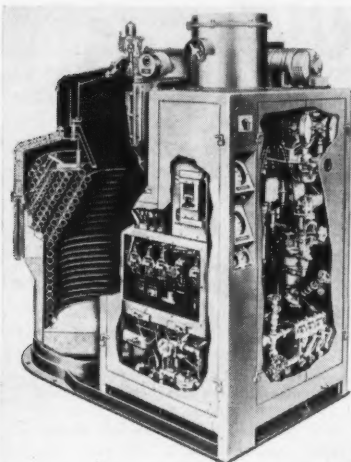
CHEMICAL PROCESSING

When inquiring check CP 6758 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

using 450 psi for water evaporation; and, metal finishing — steam to heat cleaning and phosphating solutions in big spray machines.

Features: Once started, by turning one switch, automatic controls take over causing the machine to turn on and off and produce steam only when needed. Steam pressure may be changed from 75 to 600 psi by turning one control.



Many industrial uses for generator

applied. One electric motor drives the water pump, fuel pump, blower and magneto. Single control automatically adjusts the machine to produce from 1/3 to full capacity. Safety controls incorporated into machine are: steam temperature limit control, stack temperature cut-out, safety valves and electric flame control.

Source: Manufactured by Vapor Heating Corp., Dept. CP, 4501 W. 16th St., Chicago, Ill. . . . or for more information check CP 6762 on handy form, pages 2 and 3.

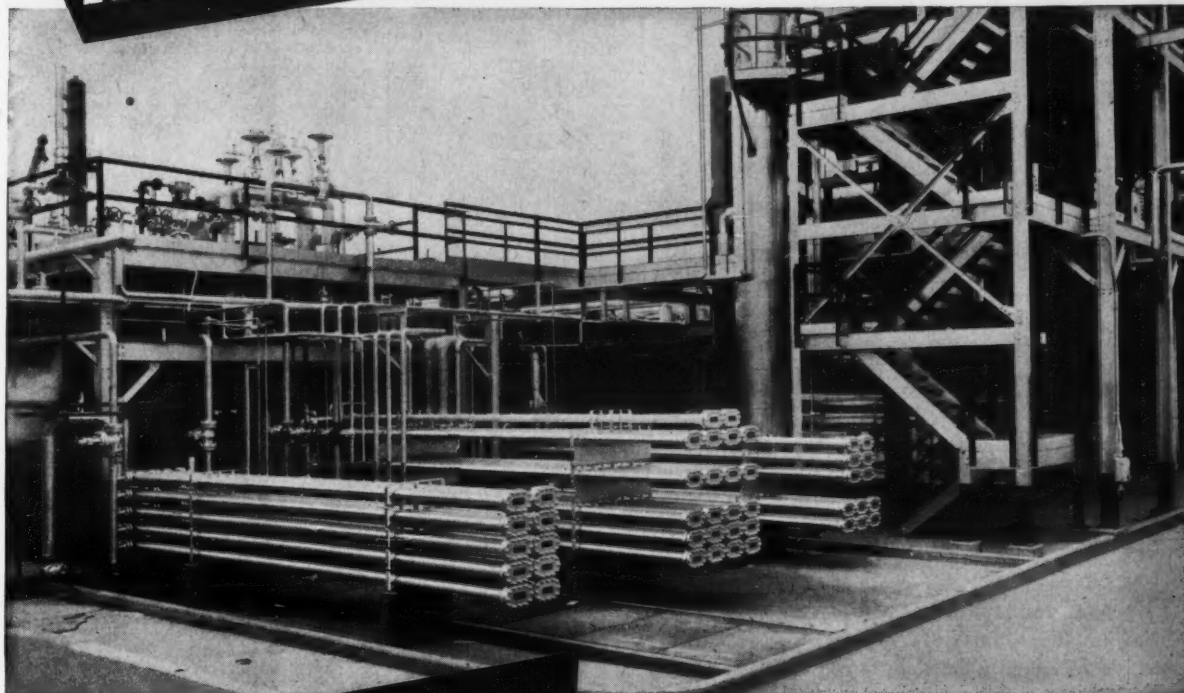
Features efforts of 39 experts in beet-sugar technology

574-page book represents combined efforts of 39 authors to present important aspects of the beet-sugar industry in coordinated form. Treatise is addressed to three groups of readers: beet-sugar factory technicians; sugar-beet growers and others connected with, or interested in the industry; and professional engineers, chemists, and technological college students, as a reference manual. Includes all phases of beet-sugar manufacture with exception of organization, finance and marketing.

Elementary discussions are given to all subjects with additional advance material on subjects and unit operations peculiar to the sugar-beet industry. Subjects given brief treatment include use of activated carbon, evaporation and fuel economy, crystallization theory, packaging and storage, waste disposal, recovery of amino acids, and steam generation.

Subjects given detailed treatment are history, sugar-beet culture, insect pests, plant diseases, the tare laboratory, beet storage, diffusion, chemistry of juice purification, first and second carbonation, sludge thickening and filtration, ion-exchange practice, practical sugar crystallization, special sugar products, lime production in the Belgian kiln, saccharate processes, pulp drying, and technical accounting. To obtain "Beet-Sugar Technology" remit \$10 direct to Reinhold Publishing Corp., Dept. CP, 330 West 42nd St., New York 18, N. Y. When inquiring specify CP 6763 on handy form, pages 2 and 3.

Easier Maintenance in your plant



with BROWN FINTUBE

sectional hairpin heat exchangers

● Brown Fintube Sectional Heat Exchangers make maintenance easier and less costly. The integral welded-on fins *positively can not* work loose from the center tube. Their efficient heat transfer at low "skin" temperatures, and the absence of baffles and stagnant areas in the exchanger, minimize coking and fouling.

The ingenious head end assembly, employing a ring joint seal, and the easy to handle rear end cover plate permit an exchanger to be opened, a clean hairpin substituted, and the exchanger put back on stream again in less than ten minutes. For top operating efficiency and easier, less costly maintenance, write for Brown Fintube **Bulletin No. 481.**

THE BROWN FINTUBE CO. Elyria, Ohio

Sectional Hairpin Heat Exchangers
Tank Suction and Line Heaters
Fintube Heaters for Bulk Storage Tanks
Indirect Process Air Heaters
Fintube Heaters for Processing Tanks
Integrally Welded Fintubes for Any Heating,
Cooling or Heat Transfer Service

NEW YORK • BOSTON • PHILADELPHIA • WILMINGTON • PITTSBURGH • BUFFALO • CLEVELAND • CINCINNATI • DETROIT • CHICAGO
ST. PAUL • ST. LOUIS • MEMPHIS • BIRMINGHAM • NEW ORLEANS • TULSA • HOUSTON • LOS ANGELES • SAN FRANCISCO

When inquiring check CP 6764 on handy form, pgs. 2-3

GLASS

Woven entirely from Glass Fibers

Filter

As Chemically Resistant as Chemical Glass Itself

Cloths

Various Degrees of Porosity

Are you filtering or would you like to filter strong acid or oxidizing solutions at high temperatures?

Are your conditions in these respects too severe for other synthetic fibers?

If so, NFM Woven Glass Filter Media may well be your answer. You can purchase our Glass Filter Cloth in rolls ranging in widths from 26" to 64" (100 linear yards or more) and in any length of the standard 38" width which is a stock item. Several different weaves are available, ranging between a dense, tight-filtering surface and a rather porous one.

* * *

If you want the cloth made up into filter element covers, anode bags, collector bags, etc., we are in position to do this at nominal cost... considerably less cost than when they are prepared in your plant. They'll be "all glass", too. We use glass thread for sewing.



Weavers of Industrial Filter Media for over Forty Years

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When inquiring check CP 6765 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

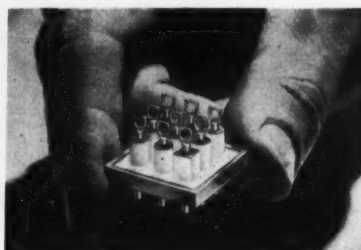
Use of fused hermetic seal for transformer terminals avoids shock . . .

seal AF, AG, AH and AJ size cases in specification MIL T-27

Uses: For hermetically sealing AF, AG, AH and AJ size transformer cases in specification MIL T-27, as well as larger sizes.

Features: Due to the character of Teflon and the nature of seal, terminals withstand severe mechanical shock and vibration and thermal shock. There is no strain point as with a fused glass or ceramic-metal seal. Assembly is facilitated because there is no danger of breakage. In addition, there is complete absence of DC plating.

Description: Production of these terminals utilizes maker's method (patents pending) of achieving a fused hermetic seal between fluoro-carbon resins and metals. One to nine-pin transformer terminals are offered. The fluorocarbon-metal hermetic seal structure is micro-crystalline in nature and sections through the seal show a gradual change from a pure fluoro-carbon resin to a pure metal.



9-pin transformer terminal

Terminals are serviceable at temperatures from -150° F to 525° F. without change in electrical characteristics. Because of zero water absorption, they are unaffected by extremes of humidity. Also, Teflon is impervious to corrosive atmospheres and fungus, and is non-inflammable.

Source: Hermetically sealed Teflon transformer terminals are made by United States Gasket Co., Teflon Products Div., Dept. CP, Camden, N. J. . . . or for more information check CP 6766 on handy form, pages 2 & 3.

How to repair floors more quickly

Two-color folder tells how to repair broken concrete floors in three steps. It is reported that 50,000 lb loads can be handled one minute after repairs are made. Form 120-11 is issued by The Monroe Company, Inc., Dept. CP, 10703 Quebec Ave., Cleveland 6, Ohio. When inquiring specify CP 6767 on handy form, pages 2 and 3.



FOR ANY
CHEMICAL
PROCESS

It's being proved every day: Valve leakage ON ANY FLOW can be stopped!



DeZurik Easy-Operating Plug Valves are going into plant after plant because they don't leak . . . their exclusive rubber-faced plugs do a leakproof, drip-free job in any service from gas to acid to slurries.

Write for complete catalog.

DEZURIK SHOWER CO.
SARTELL, MINNESOTA

Made in England by Millspaugh, Ltd., Sheffield

When inquiring check CP 6768 on handy form, pgs. 2-3

Like an Automatic Gear Shift...



DELIVERY OCTOBER FIRST

Capacity changes are simple — and sure — with the new Waukesha SHIFTSPEED pump. Just turn the handwheel until the dial on the streamlined housing shows the speed you want. That's all. No need to bother with belt-and-sheave changes. No need to stop the pump or interrupt your line-flow. It's the new "Automatic Gear Shift" of the pump industry — to save you time and effort. A new "High Speed Stop" with External Sealing Device, next to the handwheel prevents over-shooting your production flow capacity. A non-slipping, no-stretch standard timing belt assures long-lasting, positive power delivery at all speeds.



Waukesha
SHIFTSPEED
Sanitary Pump

Waukesha
100%
SANITARY
PUMPS
Dependable Product of a Responsible Manufacturer

When inquiring check CP 6769 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

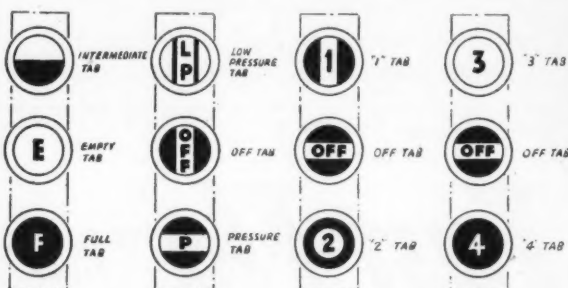
3-position indicator has application in mechanical, electrical, fluid and air systems . . .

operates in similar manner to aircraft landing gear position indicator on which it is based

Uses: Has been specified in aircraft as landing gear position indicator, and for reporting of de-icing fluid level and cabin air pressure. Can be used to report pressures in factory hydraulic or air circuits and to maintain checks on levels of lubricating oil, coolant, chemicals, or other liquids held in reservoirs.

Features: Informs equipment operators of mechanical relationships, settings, and positions not accessible for inspection. Compact, sturdy, easy to read and built to operate under adverse physical conditions.

Description: Indicator body weighs under 2 1/2 oz and consists fundamentally of a rotating card which exhibits one of three printed symbols at a round observation window in one end of the instrument. Card is operated by two solenoids which draw it up or down to either of two extreme positions. When neither coil is energized the spring-balanced card returns to neutral position, exhibiting the third symbol. Unit withstands low temperature tests of from -85 to 158° F, and will pass vibration tests of .018 to .020" amplitude between 300 and 3000 cycles



per minute, as well as 4-hr cyclic thermal shock tests. Symbols on the card can be designed to meet requirements of the job as seen from accompanying illustration.

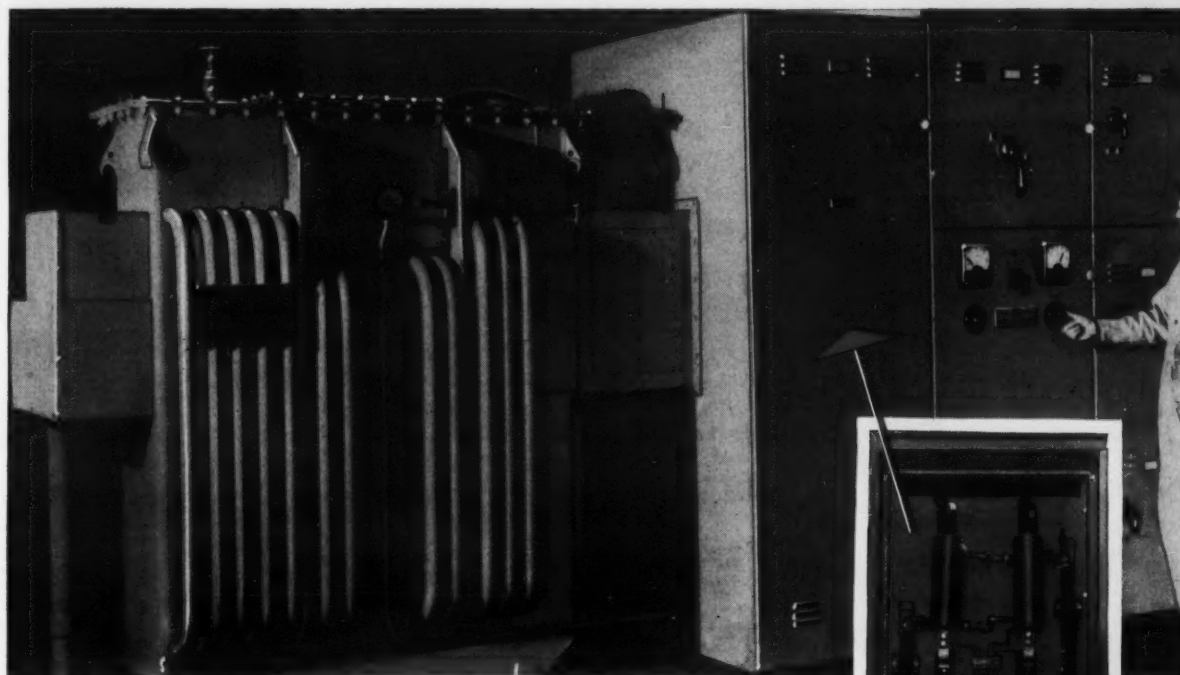
Source: The Keystone 3-Position Indicator is manufactured by The Riverside Metal Co., Dept. CP, Riverside, N. J. . . . or for more information check CP 6770 on handy form, pages 2 and 3.

Covers variable pitch pulleys and related equipment

Catalog of 29 pages covers complete line of variable pitch pulleys, adjustable motor and countershaft bases, wide V-groove companion sheaves and standard vari-speed belts. Contents outline procedure for selecting proper drive arrangement for transmitting horsepower at the three speeds (1750 rpm, 1150 rpm, 860 rpm) considered standard by the motor manufacturers. A set of general dimensions and 14 specification tables aid in the selection process by including all pertinent data for pulleys in hp ratings from 1/4 to 15.

Also gives diagrams on the construction of the pulley, adjustable and tilting motor bases, and dimensions on the companion sheaves and variable speed belts. General information deals with installation and lubrication of pulleys. Catalog 651 is issued by Gerbing Manufacturing Corporation, Dept. CP, 11800 Milwaukee Ave., Northbrook, Ill. When inquiring specify CP 6771 on handy form, pages 2 and 3.

Now, St. Paul Foundry & Mfg. Co. buys all its power; saves \$25,000 annually!



Costly, Inefficient Steam Generating Plant Replaced by

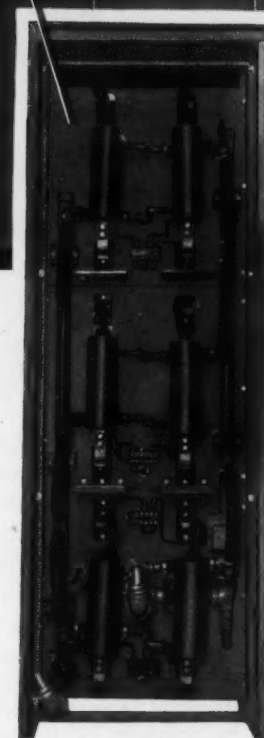


D-C UNIT SUBSTATION

Boiler capacity for cold weather heating is all that the St. Paul (Minn.) Foundry and Mfg. Co. retains of its former steam-driven d-c generating plant. By using purchased power, the company saves \$25,000 annually in fuel, operating, and maintenance costs.

Purchased power is a-c, but the plant requires d-c power for yard cranes and hoists. To tie these two systems together, a six-tube G-E sealed ignitron rectifier was installed. It operates 24 hours a day, 7 days a week.

General Electric d-c unit substations with modern sealed ignitron rectifiers occupy minimum space. The transformer, rectifier and low-voltage switchgear are supplied as a complete, metal-enclosed, packaged unit. Absence of exposed, energized parts provides maximum protection to personnel. For information on d-c unit substations to fit your d-c power needs, call or write your nearest G-E sales office. General Electric Company, Schenectady 5, N. Y.



This photo shows the simple, compact design of the G-E ignitron mercury-arc rectifier unit.

No major moving parts to wear out. No bearings or brushes to check. No vacuum pump required.

GENERAL ELECTRIC

324-4

When inquiring check CP 6772 on handy form, pgs. 2-3

Any of these "Proven Operators"

- ✓ Westinghouse, Bendix Westinghouse
- ✓ Barber-Colman, Cutler-Hammer and Philadelphia Limited torque motors
- ✓ All pneumatic motors
- ✓ Air loaded pneumatic motors
- ✓ All double and single action air cylinders
- ✓ Mechanical springs



may be used with
HILLS-McCANNA
Diaphragm Valves
for automatic or
remote operation

The extreme flexibility of Hills-McCanna diaphragm valves makes it possible to satisfy virtually any preference or requirement in the use of mechanical operators. All of the operators listed above plus others are applied to standard Hills-McCanna sliding stem valves to provide complete units that utilize your existing operating methods.

Designed especially for conveying "hard-to-handle" fluids such as acids, alkalis, volatile and viscous substances, slurries, semi-solids, etc. Hills-McCanna diaphragm valves give you the advantages of "special" design on a standardized basis. Sizes range from 3/4" through 14" (not all methods of operation are available in all sizes); pressure up to 150 psi; temperatures to 180°F. (some applications to 220°F.). Write for complete information, HILLS-McCANNA CO., 2370 W. Nelson Ave., Chicago 18, Ill.

HILLS-McCANNA
Saunders patent diaphragm valves

*Proportioning Pumps
Force-Feed Lubricators • Magnesium Alloy Castings*

When inquiring check CP 6773 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

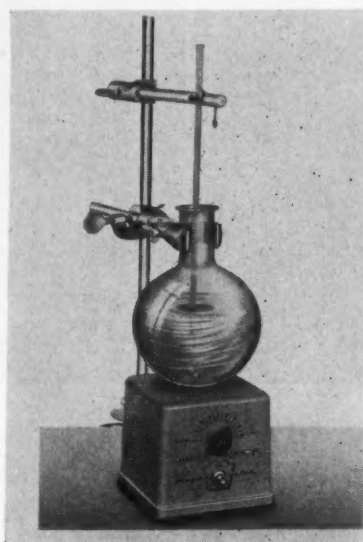
Stirring magnets resist alkalis and acids . . .

has wide range of variable speeds

Uses: Magnetic stirrer can be used for agitation of one liter or more of liquids having consistency up to that of a 60% glycerol solution.

Features: Compact and powerful motor. Teflon-covered stirring magnets resist acids and alkalis; available in three sizes. Pyrex glass covered stirring bars also obtainable.

Description: Magnetic stirrer has cast aluminum housing designed either for use directly on bench, or mounted



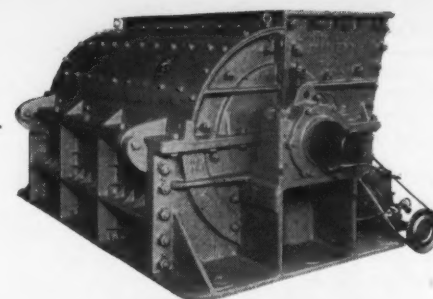
Wide range of speeds available in magnetic stirrer

on any part of a set-up frame. Speed can be varied from barely turning to vigorous churning action, and separate on-off switch permits stirrer to be turned on or off without disturbing speed setting.

Source: Magne-Stir is made by Laboratory Industries, Inc., Dept. CP, 4710 W. North Ave., Chicago 39, Ill. . . . or for more information check CP 6774 on handy form, pages 2 & 3.

Engineering of floors explained

Two-color, 12-page booklet explains factors and methods of floor engineering. Mechanical, thermal and chemical needs are examined in order to find solutions which apply to specific conditions. "Why Engineer A Floor?" is issued by Flash-Stone Company, Inc., Dept. CP, Philadelphia 44, Pa. . . . or for more information check CP 6775 on handy form, pages 2 & 3.



SHREDDERS for Industries who buy their raw materials loose or baled — Strips or Sheets

Typical raw materials handled with a Gruendler Shredder . . .

CORK
BAGASSE
STRAW

SCRAP PAPER
PULP LAP
LEATHER

AND MANY OTHER MATERIALS

Call on us, if you have a special material refining job to do.

Write for Bulletin 11 B.

GRUENDLER CRUSHER & PULVERIZER CO.

Plant & Executive Offices —

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St. Louis 6, Mo.

LABORATORIES, 1911 North Market, St. Louis, Mo.

When inquiring check CP 6776 on handy form, pgs. 2-3

Fast-Flo TRANSFER PUMP

HANDLES HUNDREDS OF FLUIDS AND SEMI-FLUIDS

WORKS DOZENS OF WAYS!

• Handiest piece of equipment in the plant! That's the verdict at scores of plants which use Graco's Fast-Flo Transfer Pumps.

Fast-Flo is a really versatile worker . . . has dozens of different specific uses. Here are just a few ways it will work for you:

- For transferring fluids from original drum to smaller vessels.
- For transferring from open tanks to smaller vessels.
- For transferring fluids to an overhead tank.
- For supplying multiple outlets above or below pump.
- For supplying hose reel which reaches several mixing vats or other vessels.

Fast-Flo is low in cost . . . easy to handle . . . a rugged worker. Provides double-action, high volume delivery. Air-operated. Write today for free literature!

GRAY COMPANY, INC.
93 Graco Square
MINNEAPOLIS, MINNESOTA



DOES NOT PRESSURIZE CONTAINER!

GRACO Fast-Flo TRANSFER PUMP

District Offices in NEW YORK, PHILADELPHIA, CHICAGO, DETROIT, SAN FRANCISCO
When inquiring check CP 6777 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

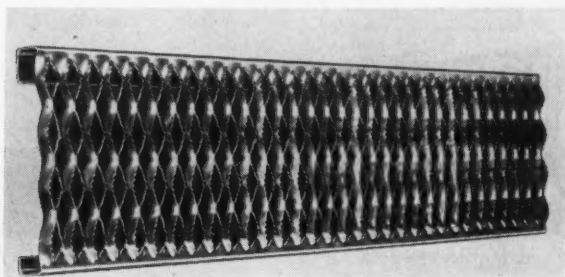
Non-skid surface employs diamond-shaped struts . . .

sections 20" wide and 48" long withstood over 100,000 one inch oscillations without damage

Uses: Railroad running boards, cat walks, work platforms, steps, etc.

Features: Great strength coupled with light weight. One piece material with no welding or peening operations occurring in manufacture. Metal for forming into longitudinal channels, step riders, step nosings or mouldings is integral with the grated surface, eliminating the need and cost of welding in many applications.

Description: Product presents an anti-skid surface on the edges of a series of formed struts. Grating appears as a diamond-shape pattern in which the percentage of open area is in excess of 75% of the total reticulated surface. 12 to 16 gauge sheet steel or aluminum used in manufacture. Struts or vertical members are joined by integral saddles to create lateral struts of great strength.



View showing diamond-shaped struts

In reticulating process of manufacture, there is neither gain or loss in original measurements of sheet material as procedure is more of a slitting and folding one. Structure makes possible cleaning with a brush or broom. Sanitary features make product useful elsewhere.

Source: Made by The Globe Co., Dept. CP, 4000 S. Princeton Ave., Chicago, Ill. . . or for more information check CP 6778 on handy form, pages 2 and 3.

Announces totally enclosed fan-cooled construction for capacitor motors . . .

offered in explosion proof and dust-explosion proof construction for use in hazardous locations

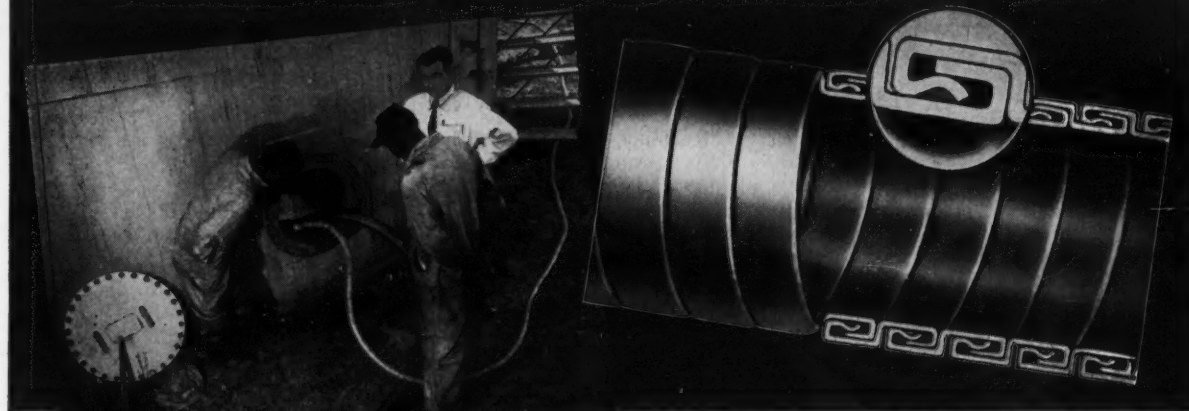
Uses: Where severe conditions of dirt, grit, or moisture are encountered. Typical applications are: coal stokers, exhaust fans, grain elevators, and fuel pumps.

Features: Starting capacitors and switch mounted within the frame to provide maximum protection with minimum space requirements.

Description: Of cast iron construction, motors are available in ratings of 1, 1½, 2, 3, and 5 hp. Last size uses 230 v supply and others operate on 115/230 v, 60 cps power source. Offers standard protection against physical damage, electrical breakdown, and operating wear and tear. Motors have cast aluminum squirrel-cage rotors, and easily accessible grease fittings simplify relubrication. Being capacitor motors, there are no brushes or commutators to interfere with radio or television reception.

Source: Manufactured by General Electric Co., Dept. CP, Schenectady 5, N. Y. . . or for more information check CP 6779 on handy form, pages 2 and 3.

Utility hose of 101 uses around the plant or in the field . . .

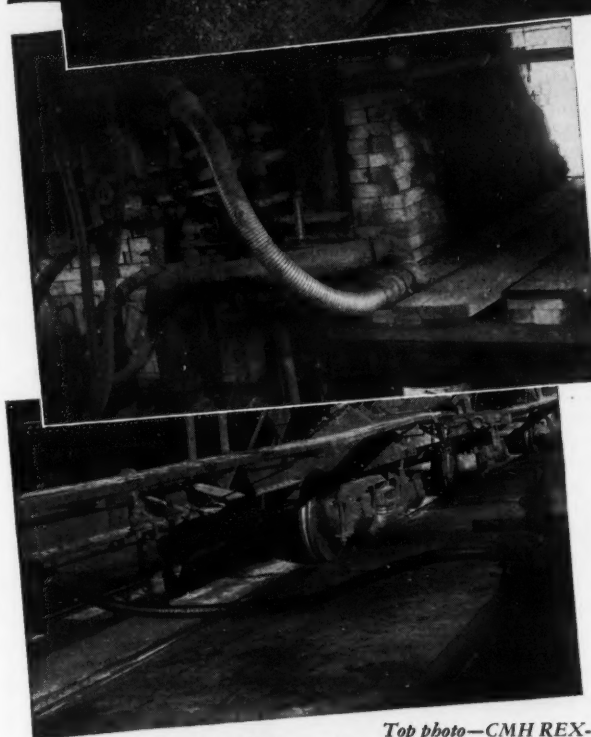


CMH REX-TUBE Interlocked Flexible Metal Hose

IF you convey steam, tar, asphalt, oils, hydrocarbons or similar substances between relatively movable parts, CMH REX-TUBE Type RT-15 flexible metal hose does the job economically and dependably. REX-TUBE Type RT-15 combines the long life and durability of metal with an exceptionally high degree of flexibility. Further, it is non-aging, non-contaminating and non-collapsible.

REX-TUBE Type RT-15 is of fully interlocked design in bronze or steel with asbestos packing. (See cross-section above.) Suitable for temperatures up to 600° F; pressures to 500 psi. Sizes range from ½" I.D. through 12" I.D.

Data sheets including specifications are available on request. Write, today!



Top photo—CMH REX-TUBE Type RT-15 being used to steam out a storage tank. Middle photo—CMH REX-TUBE Type RT-15 used as a gas connection for a furnace. Bottom photo—CMH REX-TUBE Type RT-15 used for unloading a tank car.

Flexon identifies CMH products that have served industry for over 49 years.



CMH

CHICAGO METAL HOSE Corporation

1319 S. Third Ave. • Maywood, Ill. • Plants at Maywood, Elgin, Rock Falls, and Savanna, Ill.
In Canada: Canadian Metal Hose Co., Ltd., Brampton, Ont.

ONE DEPENDABLE SOURCE for every flexible metal hose requirement

Convuluted and Corrugated Flexible Metal Hose in a Variety of Metals • Expansion Joints for Piping Systems
Stainless Steel and Brass Bellows • Flexible Metal Conduit and Armor • Assemblies of These Components

When inquiring check CP 6780 on handy form, pgs. 2-3



Technical Topics

MACHINING 18-8 STAINLESS STEEL ... METALLURGICAL CONSIDERATIONS

Norman S. Mott

Chief Chemist and Metallurgist

Most of the headaches associated with the machining of stainless alloys can be cured with machining experience, but some of them are associated with metallurgical considerations. This applies both to the wrought and the cast materials. Too often the underlying causes and the possibilities for their correction are not well understood. The purpose of this discussion is to review these causes, and to indicate the steps which may be taken to eliminate them.

The basic difficulties experienced in the machining of stainless alloys are:

1. The metal is too hard. . . . The cutting tool cannot penetrate or too much cutting tool pressure is required.
2. The metal is too tough. . . . It tears away instead of breaking up into chips.
3. Frictional or galling characteristics are excessive. . . . Chips adhere to the tip on the tool, resulting in the balling up of the cut metal.
4. Microstructural non-uniformity or segregation. . . . This causes hard spots and results in rough or uneven machined surfaces.
5. The metal work hardens. . . . This results in a blunt tool and a polishing rather than a cutting action. Let us review each of these difficulties in turn:

Hardness: Hardness in 18-8 stainless, such as to cause difficult machining is not an inherent characteristic. It is usually found in the form of work hardening, either from cold rolling or from hot working to too low a temperature. Although machining operations have been conducted up to as high as 350 Brinell, this requires a slow special technique and for practical purposes such hard metal should be soft annealed by water quenching from 1950-2100° F.

Toughness: Correctly heat treated 18-8 stainless in the condition for maximum corrosion resistance is very tough and ductile. These are desirable characteristics from a mechanical viewpoint, but they are pretty tough

on machinability. Experience has shown that machining difficulties can be minimized through the addition of an embrittling agent such as selenium, sulphur or phosphorus. And when properly controlled, maximum machinability with a minimum loss of corrosion resistance can be accomplished.

Galling: Galling tendencies, which are associated with softness and ductility, are also largely eliminated by controlled additions of various alloying elements.

Hard Spots: Hard spots are caused by microstructural segregations such as carbides and other hard phases. The machining tool in passing over these areas does not cut properly and gives a raised and usually a glazed surface, producing a so-called "orange peel" effect. Correct quench annealing heat treatment is required in order to eliminate such a condition. Another cause of hard spots may be burnt-in pieces of molding sand, a condition sometimes found in poor quality castings.

Work Hardening: Work hardening is a universal characteristic of the 18-8 stainless steels. Pressure by the machine tool tends to cold work the surface and make it hard. To offset this, there are a number of machinists' tricks which are somewhat beyond the scope of this discussion. (Further data on the machining techniques can be found in J. J. Roberts' paper, "Don't Fear Threading of Stainless.")

Available on Request

Copies of this article, printed on heavy stock in convenient filing form are available. In addition, reprints of Mr. Roberts' more complete paper will gladly be sent to you, without ob-



Stainless Steel
VALVES - FITTINGS - CASTINGS

ligation, in small quantities. Address your requests to Publicity Dept., The Cooper Alloy Foundry Co., Hillside, N. J.

PROCESSING EQUIPMENT

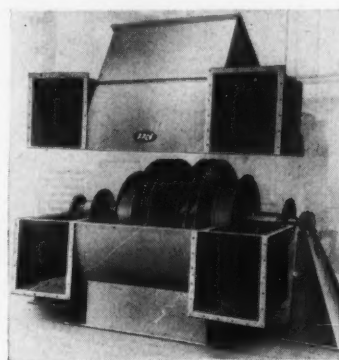
Fan characteristics allow high static pressure . . .

aerodynamically improved design reflected in performance

Uses: Fan is used for general purpose, moderately high capacity work.

Features: Improved aerodynamic design permits higher conversion of velocity to static head.

Description: Large inlet cones are streamlined to reduce turbulence at the inlet. Space is left between fan wheels



Top half of housing lifted showing fan rotor

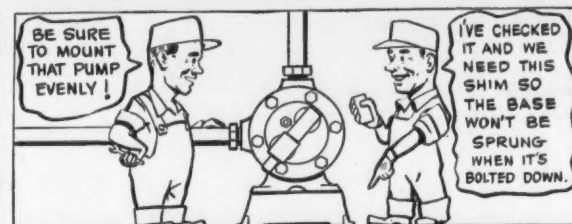
of double wheel models, instead of using a common center disc. This results in four way diffusion of the air leaving the wheels. Diffusion is further encouraged by the extra large housing.

Plotted performance data shows that the peaks of efficiency and horsepower are developed well within the proper fan selection range. In other words, maximum efficiency can be attained without overloading the fan. Further details are available in manufacturer's Bulletin 300.

Source: Development of Prati-Daniel Corporation, Dept. CP, East Port Chester, Conn. . . . or for more information check CP 6782 on handy form, pages 2 and 3.

Give specifications on threaded bars

Bulletin covers data on size range, lengths, kinds of threads, bending, types of finishes of steel bars that are furnished threaded. Also illustrates some of the accessories that are furnished, including turnbuckles, nuts, washers and tank lugs. "Ryerson Threaded Bar Service" is issued by Joseph T. Ryerson & Son, Inc., Dept. CP, Box 8000-A, Chicago 80, Ill. When inquiring specify CP 6783 on handy form, pages 2 and 3.



No. 1 of a Series

HOW TO GET THE MOST WORK OUT OF YOUR VIKING PUMPS

When mounting a Viking Rotary Pump and bolting it down, be sure that the base is not sprung. Bolting the pump down over an uneven surface may cause binding and heating in the stuffing box. It may cause working parts of the pump to bind and wear beyond repair in a short time. The pump must be free enough to turn the shaft by hand.

Get EXTRA wear out of your Viking Pumps by giving them EXTRA care. The Viking Service Manual tells you how. It's a handy, illustrated booklet giving you practical help in mounting, operating and maintaining Viking Pumps. Write for your copy of Manual CC today. It's FREE.



Viking PUMP COMPANY
Cedar Falls, Iowa

When inquiring check CP 6784 on handy form, pgs. 2-3



Pat. 2526290 2188741

Certified Ratings Impartial laboratory tests under the direction of a nationally recognized authority, covering the entire unit. Capacities 150-11,000 CFM; Static Pressures to 1 1/4"

Scroll Effect An exclusive built-in Gallaher feature Maximum efficiency beyond 1/4" static pressure is not possible without it.

Safe Fume Handling Motor out of the airstream and a positive air seal-off around motor shaft prevents fume passage into motor housing while unit is in operation.

See your Gallaher Representative or write
Dept. C, 4108 Dodge St. Omaha, Nebraska



The GALLAHER Company
Omaha, Nebr. Owatonna, Minn.

When inquiring check CP 6785 on handy form, pgs. 2-3

CHEMICAL PROCESSING

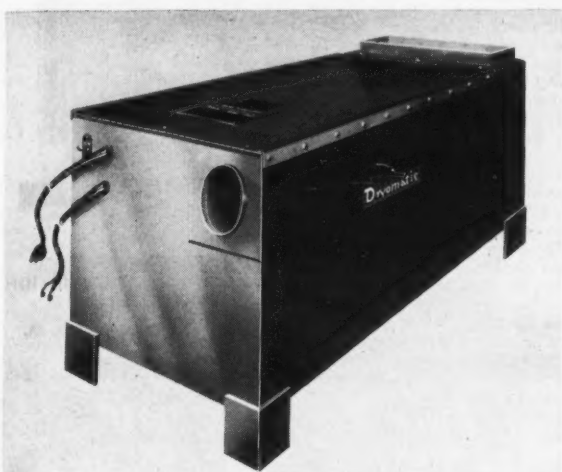
When inquiring check CP 6781 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Humidity levels as low as 15% maintained in processing plants, and storage rooms . . .

this compact unit can be used singly or in multiples
Uses: For year 'round humidity control and protection against rust, mold, mildew and corrosion that might be hazards in storage rooms, warehouses and in processing plants.

Features: Unit is a 3-channel continuous adsorption dehumidifier with plug-in automatic operation. There are



Controls humidity from -40 to 100° F

no buckets to empty or chemicals to replace. Humidity levels as low as 15% can be maintained.

Description: Single units are effective in enclosed areas up to 25,000 cu ft. In larger areas, a number of units can be installed as required.

Unit gives precise control at temperatures from minus 40°F to plus 100°. Length is 45"; height 19", width 16". 110 v, 60 cps, single-phase operation with a maximum power consumption of 1.2 kilowatts.

Source: Model 100 adsorption-type humidity control unit is built by Dryomatic Corp., Dept. CP, 812 North Fairfax St., Alexandria, Va. . . or for more information check CP 6786 on handy form, pages 2 and 3.

Compressed air powers and controls slurry pump

Diaphragm slurry pump is powered and controlled by compressed air. Air operates diaphragm directly with no mechanical linkage. An electric timing solenoid valve on air line can be adjusted for desired number of cycles per minute so that volume is controlled or set for proportioning. Corrosive and abrasive material is handled well due to the construction which has a minimum-of moving parts and no rotary seals or stuffing boxes.

Six-page bulletin describes and illustrates pump and parts. Capacities (composite range of 1 to 100 gpm for 6 models) are given with lifts, heads, air pressure and air consumption in graph form. Details of piping layout are shown. The pump has been successfully used on a great variety of materials. Bulletin 309-R is issued by Oliver United Filters, Inc., Dept. CP, 33 W. 42nd St., New York 18, N. Y. When inquiring specify CP 6787 on handy form, pages 2 and 3.

Remember—

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Special alloys lick special piping problems

YOU can overcome special problems of corrosion, fluid contamination, pressure, or temperature by selecting pipe and welding fittings of special materials.

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Write Dept. KK-9 for free booklet "Pipe and Fitting Materials" which gives specifications, properties and welding procedures for various materials.

"Be sure you see the double tt"

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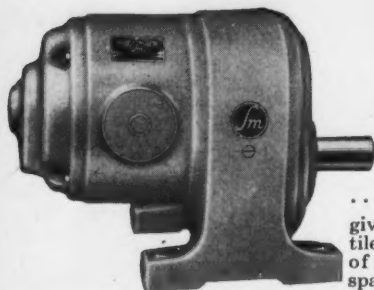
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TUBE TURNS OF CANADA LIMITED, CHATHAM, ONTARIO . . . A wholly owned subsidiary of TUBE TURNS, INC.
Write Dept. KK-9 for free booklet "Pipe

When inquiring check CP 6788 on handy form, pgs. 2-3



power modernization

...for increased industrial efficiency



requires
correct
production speed

STERLING SLO-SPEED

... GIVES YOU THE ONE BEST SLOW SPEED AND gives uninterrupted service—provides versatile mounting and flexibility in arrangement of machinery—is rugged—saves valuable space—provides greater safety—costs less to install and use. An indispensable source of slow speed power for:

Ask for your copy of pictorial bulletin No. E-52 showing Sterling Electric Power Drives Turning The Wheels of Industry.

Agitators	Dryers	Presses
Blenders	Feeders	Pumps
Blowers	Kilns	Screens
Conveyors	Mills	Tumblers
Cookers	Mixers	Etc., etc., etc.

STERLING ELECTRIC MOTORS

Plants: New York 51, N. Y.; Los Angeles 22, California; Hamilton, Canada; Santiago, Chile.
Offices and distributors in all principal cities.

When inquiring check CP 6789 on handy form, pgs. 2-3

METALAB

LABORATORY EQUIPMENT



Out of this world in **QUALITY...**

Down-to-Earth in ECONOMY

Imagination in Lab Equipment?

Yes, but also the sound business virtues of Economy, Efficiency, and Long Life.

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Equipment Corp.

230 DUFFY AVE., HICKSVILLE, L.I., N.Y.

When inquiring check CP 6790 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

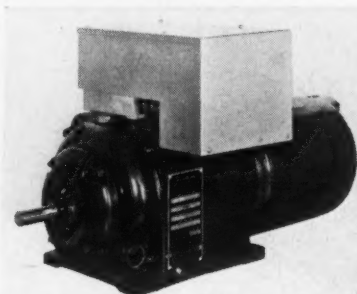
Controls transmission, indicates speed remotely . . .

infinitely variable speed transmission available for 1/12 to 5 hp

Uses: Electrically controlled transmission can be had on all equipment including mechanical reversing types, non-reversing drives, and on transmissions with or without built-in gear reducers. Compact assembly of electrical control, variable speed transmission, motor and reducer is installed on the driven machine with only four mounting bolts.

Features: Control handles zero to top speed for installations of 1/12 to 5 hp. Stepless changes can be made.

Description: Packaged control provides good accuracy of speed setting from maximum speed to zero. Control is mounted on the transmission with



Variable speed transmissions in 1/12 to 5 hp range

only four bolts and may easily be added to drives already in the field. It is available for push button operation at the remote point and can be had with or without remote speed indication. Sizes bigger than 1/4 hp are available for immediate shipment.

Source: Graham Transmissions Inc., Dept. CP, 3754 N. Holton St., Milwaukee 12, Wis. is the maker . . . or for more information check CP 6791 on handy form, pages 2 and 3.

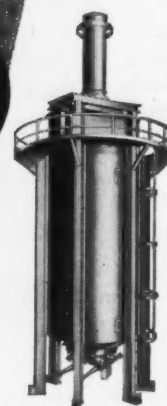
Specifies 10 to 45 cu yd storage bins

Storage bins and loading bins are discussed in two-color, four-page bulletin with accompanying photographs and drawings. Sizes, specifications and applications are covered, together with the types of bin gates available for discharging the bins. Included are single and multiple compartment bins up to 45 cu yd capacity. "Pioneer Steel Storage Bins" is issued by Pioneer Engineering Works, Dept. CP, 1515 Central Ave., Minneapolis 13, Minn. When inquiring specify CP 6792 on handy form, pages 2 and 3.

★ For Direct Heating of Liquids and Vapors

★ Indirect Heating Systems Using Circulating Medium

Struthers Wells
FIRED HEATERS
for the Process Industries



Struthers Wells direct fired heaters are available in sizes from 100,000 to 25,000,000 BTU per hour, for heating gasoline, oils or asphalts, superheating steam or gas, and for indirect heating systems.

Struthers Wells indirect heating systems give economical—trouble-free operation at temperatures to 750° F., or above.

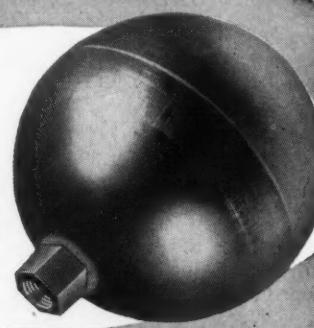
If your process requires temperatures above those of existing steam supply—if steam is not available, or if the process can be improved by higher temperatures, investigate this simple and economical equipment. • Write on your letterhead for Bulletin B-45, describing our complete line of equipment for high temperature process heating.

STRUTHERS WELLS CORPORATION
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Offices in Principal Cities

When inquiring check CP 6793 on handy form, pgs. 2-3

End These Common Float Failures



- Corrosion
- Lack of Buoyancy
- Collapsing
- High Replacement Cost
- High Temperature Failure

Use STAINLESS STEEL FLOATS

Standardize on Stainless Steel for all your float requirements. You'll find that the long, trouble-free service you get will literally put an end to your float maintenance problems. Costly dismantling of equipment to get at faulty floats is practically eliminated because Stainless Steel Floats from Chicago Float Works will function efficiently for many years, often for the life of the equipment in which they are installed. At Chicago Float Works you get the advantage of a complete line of standard sizes, shapes, and spud connections to choose from. Pressures to 1000 lbs.; temperatures to 800° F. Also special floats made to order. Monel and Nickel floats available for special applications.

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CHICAGO FLOAT WORKS, INC.
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When inquiring check CP 6794 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

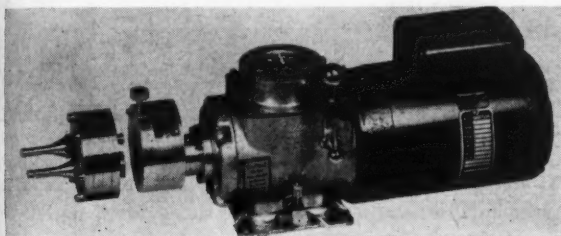
Heads are sterilizable on stainless steel metering pumps . . .

provide efficient, positive displacement action which delivers non-pulsating flow

Uses: Control of biologicals, pharmaceuticals and other sterile solutions where prevention of contamination is important. Dispensing of hot or cold, viscous or non-viscous liquids such as soaps, oils, perfume, extracts, glue, liquid fats, grease, wax, and other chemical compounds.

Features: Pump heads are sterilizable, instantly demountable and interchangeable on fixed speeds or variable speed driving units, giving advantage of spare units for various liquids. Materials used in construction are impervious to corrosive action of most liquids, non-pyrogenic and will maintain sterility while dispensing critical liquids.

Description: Pumps available with two types of variable speed driving units and various size fixed speed motorized transmissions. Type VQDC-5520-EM are equipped with variable speed transmissions and have a water output range from 0 to 30 cc/sec; equipped with 1/8 hp, 115 v, 60 cps, AC motor, and micrometer speed regulators which are ad-



Pumps vary in weight from 10 1/4 to 33 pounds

justable while running. Type VQDC-132-W are variable capacity pumps with output of 4 to 30 cc/sec and powered with 1/25 hp, 60 cps, 115 v, AC motor. Type VQDC-2412 are fixed capacity pumps and available with various fixed speed transmissions for dispensing water capacities from 10 to 75 cc/sec; equipped with 1/12 hp, 115 v, 60 cps, AC motor.

Source: Mechanical Products Corp., Dept. CP, 168 N. Ogden Ave., Chicago 7, Ill. . . or for more information check CP 6795 on handy form, pages 2 and 3.

Only one moving part used in steam trap

Two-color, 24-page bulletin gives details of impulse steam trap using only one moving part. Not actuated by bellows, trap uses a balanced piston which controls orifice opening according to amount of condensate to be drained. Under light load, output is short pulses interspersed with trickle; under heavy load, discharge is heavy and continuous with trap wide open. Typical performance of 1/2" trap is: capacity at 100 psi, 1290 lb/hr condensate, 39 lb/hr discharged if there is no condensate. The minimum figure is 3% of capacity. Unlike conventional traps, discharge is immediate when steam is turned on, making the trap useful for quick heating applications.

Publication outlines general uses for steam traps, explains impulse type, gives method and data for figuring needed size, and shows typical applications. In addition, installation and application suggestions, charts for sizing condensate lines, and a short steam table are included. Bulletin T-1740 is issued by Yarnall-Waring Company, Dept. CP, Mermaid Lane, Philadelphia 18, Pa. When inquiring specify CP 6796 on handy form, pages 2 and 3.

SEPTEMBER, 1951

Remove Industrial Contaminants Successfully and ECONOMICALLY

You know that national, state and local air regulations are becoming more stringent annually. Air cleaning equipment, has progressed to a degree of perfection unknown a few years ago.

Buffalo Forge Company, working on actual installations as well as in the laboratory presents a diversified line of ECONOMIC —



AIR CLEANING EQUIPMENT

Backed by more than fifty years of air washing experience, we now offer wet-type air cleaning devices for contaminants which are toxic, erosive, corrosive or just a nuisance. All "Buffalo" equipment is designed to provide maximum efficiency, with ease of handling and operating, together with moderate initial cost and low maintenance cost.

5

PROVEN TYPES —

Because no one type of cleaner will meet all conditions successfully, we have available 5 different wet types — all PROVEN in actual operation in industry. In addition to individual applications, they are sometimes used together. They are:

1. The Air Washer Group — Static Washer, Wet Cell, Combination, and Triple Bank Washer
2. Hydro Volute Scrubber
3. Cupola Washer
4. Hydraulic Scrubbing Tower
5. Multistage Gas Scrubber

No matter what your contaminant — dust, fume, gas, vapor mist smoke or fog, our past experience will be valuable to you in selecting the proper equipment or combination to do a first class removal job. Remember, we are interested in the most economical way to handle your problem. So are you —



Send for Bulletin
3181-B describing the
5 types of Industrial Air
Cleaning Equipment — No
obligation.

LET OUR ENGINEERS MAKE

SPECIFIC RECOMMENDATIONS!

"Buffalo" FIRST FOR FANS
BUFFALO FORGE COMPANY
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Canadian Blower & Forge Co., Ltd., Kitchener, Ont. Branch offices in all Principal Cities

VENTILATING
FORCED DRAFT

AIR WASHING
COOLING

AIR TEMPERING
HEATING

INDUCED DRAFT

EXHAUSTING
PRESSURE BLOWING

When inquiring check CP 6797 on handy form, pgs. 2-3



STASAFE GRA-LITE

is

UNEQUALLED

by any other practical protective fabric!

No other known fabric practical for protective garments can equal StaSafe GRA-LITE in resistance to both chemicals and abrasion. Whether it be aprons, or a complete covering from hood to spats, StaSafe GRA-LITE offers you longer useful garment life!

Send TODAY for a free swatch and Bulletin No. 5291

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EQUIPMENT COMPANY

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Cleveland Newark Los Angeles

When inquiring check CP 6798 on handy form, pgs. 2-3

AUTOCLAVE ENGINEERS Announce . . .

New Magne Dash *

HIGH PRESSURE AUTOCLAVE

1. No Stuffing Box
2. Magnetically Operated Agitator
3. Positive Agitation
4. Adjustable Timer to Vary Agitation Cycle
5. No External Moving Parts
6. Internal Parts Type 316 Stainless
7. Furnished with Thermocouple Well and 4 Connections
8. Available in 100cc—250cc—500cc Sizes
9. Pressure Ratings—5,000 P.S.I. and 15,000 P.S.I.

WRITE FOR DETAILED INFORMATION

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860 EAST 191st STREET • ERIE, PENNSYLVANIA
LABORATORY & PILOT PLANT HIGH PRESSURE EQUIPMENT

When inquiring check CP 6799 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

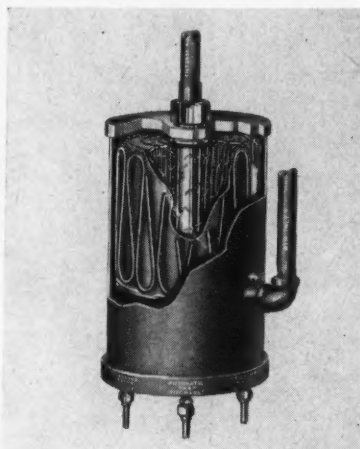
Cleans and dries air, removing 1-2 micron dust . . .

pressure drop across unit is only 2 psi when line is 100 psi

Uses: Device removes water, oil, sludge, dust and other foreign materials from compressed air. Its use is recommended for air supplies of combustion equipment, spraying, electroplating and general process work.

Features: Pressure drop across filter when handling 100 psi air is only 2 psi. Yet, it removes particles as small as 1 to 2 microns.

Description: Filtering unit is made of five hexagonal filter chambers in parallel. The more than 4 sq ft of filter surface thus presented can be easily removed for cleaning and servicing by removing one 1½" nut and lifting



Cleaner handles 30 cfm at 100 psi

out the filter. This filter unit can be cleaned by immersing the entire cartridge in a suitable solvent.

In operation, air is admitted through the side, directed through the condensing section where it is dehydrated and then passed through the mechanical filter.

Condenser unit, which removes water in both the vapor and entrained states, is composed of a series of copper coils carrying cold water. In passing over these coils, the air is brought to within 2° of the cooling water temp. Subsequent heating to ambient temperature gives a moisture reduction dependent on the water temperature used.

Filter unit chambers are each composed of seven layers of canton flannel. Particles from 1 to 2 microns and up are caught by the cloth.

Entire unit is only 15" high by 9" diam. It handles 30 cfm at 100 psi.

Source: Available from Hankison

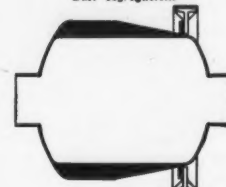
WHY Tricone Mills?

1. The tapered barrel causes correct ball alignment. Grinding energy is conserved. Ball consumption is reduced.
2. The Tricone Mill occupies less floor space for a given grinding volume than any other type of mill ever built.
3. New design bearings reduce friction and cut overall power consumption about 5%.
4. When crowded for more capacity, a grate can be added. Only smaller balls are in contact with the grate, which minimizes wear.
5. Tapered ends reduce end friction, as is evidenced by lower liner consumption and power.
6. Ideal for large tonnages.

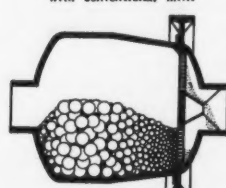
Write for Bulletin AH-414-13.



Ball segregation.



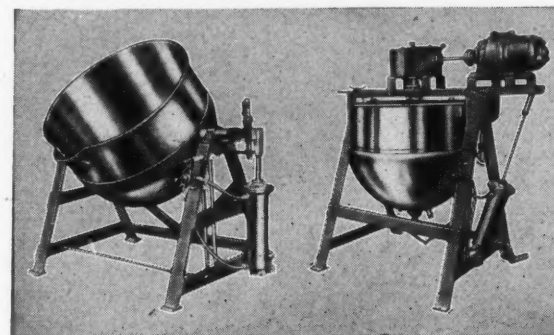
Volume comparison with conventional mill.



Tricone with grate.

HARDINGE
COMPANY, INCORPORATED

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NEW YORK 17 • SAN FRANCISCO 11 • CHICAGO 6 • HIBBING, MINN. • TORONTO 1
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When inquiring check CP 6800 on handy form, pgs. 2-3



FOR SAFETY—choose

LEE
Corrosion-Resistant
KETTLES

WITH HYDRAULIC OPERATING CYLINDERS •
Free! New Technical Bulletins

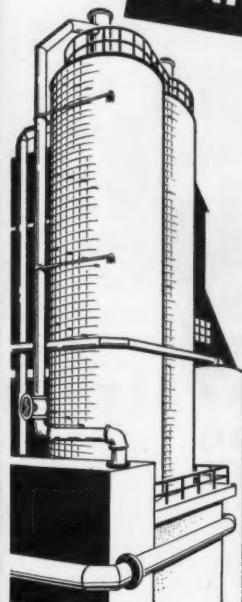
LEE METAL PRODUCTS CO. INC.
418 PINE STREET . . . PHILIPSBURG, PA.
ALL LEE KETTLES ARE MADE TO A. S. M. E. CODE

When inquiring check CP 6801 on handy form, pgs. 2-3

CHEMICAL PROCESSING

are your chemicals

MARIETTA-ized?



Don't take chances with valuable bulk chemicals. Store them safely in Marietta tanks—protected from moisture and air—surrounded by structural strength that is wind and fire proof—designed to keep chemicals BONE DRY—lower your insurance rates.

Marietta tanks are constructed of light, strong Air-Cell concrete slabs—can be erected in line, in clusters, or combined with existing units to give year 'round fully protected storage for all your chemicals—reduce your handling costs. A Marietta can be erected in about two weeks.

For full details, write, wire our nearest office for literature and engineering advice.

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Branch Offices: Race Road & Pulaski Hwy., Baltimore, Md.
Box 1575, Charlotte, N. C.

When inquiring check CP 6802 on handy form, pgs. 2-3

STOP WORRYING
about Down Time



Switch to

PLATECOIL for
(REPLACES PIPE COIL)

TROUBLE-FREE Tank Heating and Cooling

Platecoils have many times the useful life of pipe coils thus preventing many production delays. When repairs are necessary, plates are changed from outside the tank in a matter of minutes without dumping tank solution. You can save STEEL, MAN-HOURS and MONEY by using Platecoils and you will enjoy TROUBLE-FREE heating and cooling.

NEW Technical Manual No. P54 simplifies the solution of heat transfer problems. Send for your copy today.

PLATECOIL

Division
KOLD-HOLD MFG. CO.
LANSING 4, MICHIGAN

When inquiring check CP 6803 on handy form, pgs. 2-3

SEPTEMBER, 1951

PROCESSING EQUIPMENT

Corporation, Dept. CP, 240 Renton Bldg., 1501 Beaver Ave., Pittsburgh 33, Pa. . . or for more information check CP 6804 on handy form, pages 2 and 3.

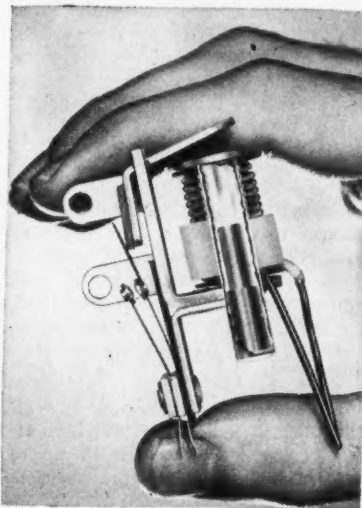
Fixed viscosity silicone determines delay time of relay . . .

delay is built into hermetically sealed tube, will not change

Uses: Time delay relay for starting equipment using mercury vapor rectifiers, automatic equipment, etc.

Features: Delay period will not change, cannot be tampered with, never needs repair.

Description: Silic-O-Netic Time Delay Relay uses a moving iron core held in a sealed tube of fixed viscosity silicone to achieve a delayed action. As shown in cut, the iron core is usually below the relay coil. When



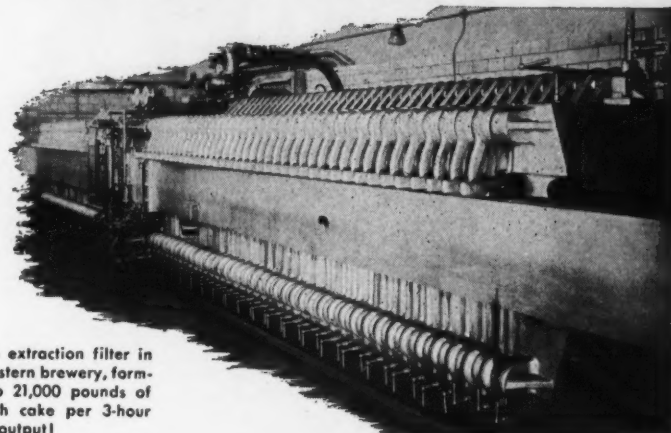
Provides time delays up to 4 minutes in 115 v, 10 amp AC circuits

coil is energized the core rises at a rate determined by the specific liquid silicone used. When core reaches its top position in the coil, increased flux draws the armature down.

Overall dimensions of the relay are only 1-5/8 x 2-1/2 x 3/4". It handles 10 amp at 120 v AC. Silicone tube is hermetically sealed against contamination or tampering. Use of high viscosity silicones permit delays up to 4 minutes. Delay is constant regardless of temperature or changes in position normally encountered.

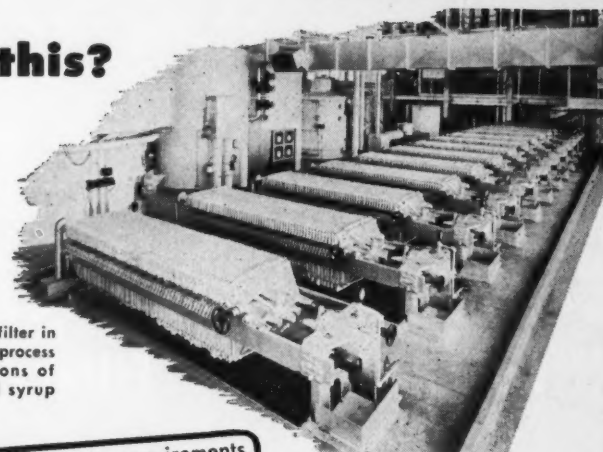
Source: Development of Heine-mann Electric Co., Dept. CP, 332 Plum St., Trenton 2, N. J. . . or for more information check CP 6805 on handy form, pages 2 and 3

Need Filter Capacity as big as this?



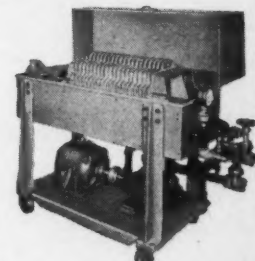
Double mash extraction filter in prominent Eastern brewery, forming 15,000 to 21,000 pounds of sparged mash cake per 3-hour cycle. That's output!

or this?



Each 60-chamber filter in this battery can process up to 2500 gallons of sugar juices and syrup per hour.

or this?



This small portable, enclosed filter unit permits filtering and washing with any number of its 20 chambers.

Whether your filter capacity requirements call for a few gallons of filtrate per batch or thousands of gallons of filtrate or tons of cake per hour—

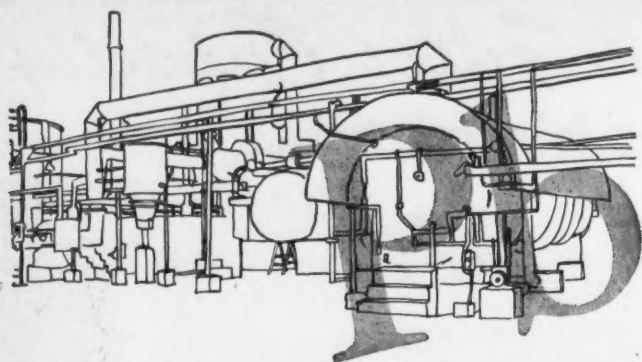
Whether your material is easily filterable; or slimy, viscous or otherwise troublesome—

Whether it must be filtered at high or sub-normal temperature—or at pressures of 750 p.s.i. or more—

No matter how much or how little your production, you can get dependable filtration rates and quality at low operating cost if your equipment is a Shriver Filter Press. And the Shriver Catalog tells why. Write for it. T. Shriver & Company, Inc., 846 Hamilton St., Harrison, N. J.

Shriver FOR BETTER FILTRATION
FILTER PRESSES

When inquiring check CP 6806 on handy form, pgs. 2-3



USING SULFURIC ACID?

Under many pressures, concentrations and temperatures, lead is the ideal material for handling sulfuric acid. It safely handles other corrosives as well.

For fabrication, lead is unique. Sheet lead can be welded, or "burned", to form a continuous lining; it can be bonded to another metal. Lead can be cast, die cast or pressure molded; extruded as pipe or other shapes; fastened by welding, flanging or bolting. Once installed, lead chemical equipment is easily repaired with a welding torch.

Because of the many complex factors in any corrosion problem, expert advice is usually advisable. For complete technical assistance, see Federated first. For lead products, think of ASARCO Brand lead pipe, lead sheet, and lead fittings.

Available in all standard sizes and forms through Federated's 22 sales offices across the country.

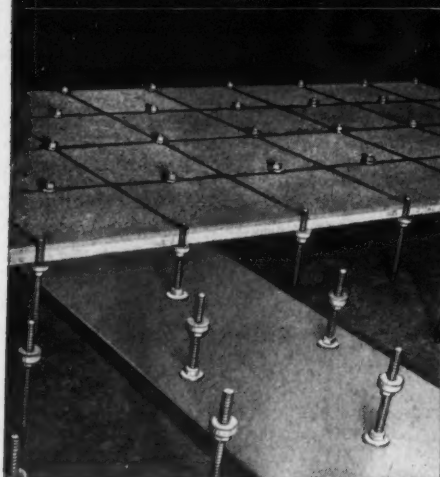
Federated Metals Division



AMERICAN SMELTING AND REFINING COMPANY • 120 BROADWAY, NEW YORK 5, N. Y.

When inquiring check CP 6807 on handy form, pgs. 2-3

CAMP POROUS BOTTOMS for Rapid Sand Filters...



Superior to conventional filters, these porous bottoms assure improved filtration, considerably longer filter runs and ability to pass increased rate of flow. Containing no layers of graded gravel, they permit repairs and inspections to be made readily and without the heavy cost of handling the sand and gravel.

WRITE FOR BULLETIN 12S12

WALKER PROCESS EQUIPMENT INC.
PROQUIP
FACTORY • ENGINEERING OFFICES • LABORATORY
PROCESS EQUIPMENT AURORA • ILLINOIS

When inquiring check CP 6808 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

**Simple design featured
in chlorination unit
for small system...**

inexpensive installation requires no technician or engineer

Uses: Handles water chlorination in small potable water plants, industrial waste and sewage, cooling water (where algae control is a problem), sanitizing bottle washing equipment, canneries, and other places where sterilization by chlorination is indicated.

Features: Unit may be easily and quickly installed and does not require the attention of engineers or technical personnel in operation. Its initial cost is less than that of alternate equipment.

Description: Hypochlorinator takes water from a high pressure point in the system at a rate controlled by a needle valve and indicated by a flowmeter. This water is injected into a tablet bed where the chlorine solution is formed. Solution is then returned to a low pressure point in the flow system. Since the body of the tablet bed container is of clear plastic, the operator can tell at a glance when refilling is necessary.

Tablets used in the bed are HTH (high test calcium hypochlorite) and contain 70% available chlorine. Used in this system, they form no insoluble sludge. Each tablet is 3/4" diam and about 1/4" thick, weighing approximately 1/6 oz. Tablets are of uniform composition and contain no filler or binder. Each tablet is equivalent to one teaspoon full of granular hypochlorite.

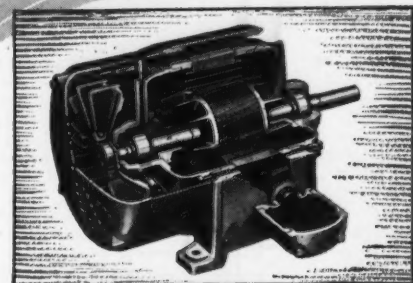
Plastic container is 17" high and 8" in diameter. This size container allows a slow steady release of up to 6 pounds of chlorine from a single filling.

Source: HTH tablets and the plastic tablet bed container are available from Mathieson Chemical Corporation, Dept. CP, Mathieson Building, Baltimore 3, Md. . . or for more information check CP 6809 on handy form, pages 2 and 3.

Explains dewatering

Two-color, eight-page bulletin explains dewatering operations and shows photographs of machinery used. Construction, operation and control of three basic types of equipment are given. Bulletin 551 is issued by General American Transportation Corporation, Dept. CP, 135 S. La Salle St., Chicago 90, Ill. When inquiring specify CP 6810 on handy form, pages 2 and 3.

CERTIFIED SAFE...



Explosion-Proof TOTALLY-ENCLOSED

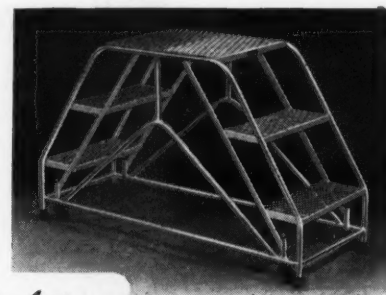


For hazardous locations where open motors are prohibited; also for dirty, dusty, damp settings where ordinary motors are short-lived. With or without Fire Underwriters' label. With or without fan. Insures safest power, longest life. Asbestos-protected windings. Horizontal and vertical types. 1/4 to 75 h.p. Write for Bulletin No. 1543.

U.S. ELECTRICAL MOTORS Inc.
Box 2058, Los Angeles 54, Cal. or Milford, Conn.

When inquiring check CP 6811 on handy form, pgs. 2-3

NEW ALL STEEL A-TYPE SAFETY LADDER



*Rolls easily, but
automatically "locks" to floor when used.*

For use on busy assembly jobs and in stockroom aisles, the Ballymore A-Type ladder permits two or three persons to work where only one can work with a standard ladder.

Will not "kick-out" because rubber tipped legs engage floor automatically when ladder is used.

Write Today For Complete Information

THE BALLYMORE COMPANY Wayne, 101 Pa.

When inquiring check CP 6812 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

Air cushioning quiets vibrator, allows it to be used near workers . . .

air-pocket at each end of cylinder stops piston from making usual amount of noise

Uses: For inducing flow of granular materials in hoppers without bridging; for speeding material flow; and for making packing operations more efficient, etc.

Features: Piston movement, at each end of stroke, is taken up by an air pocket instead of allowing piston to strike end of the cylinder. Lowering of noise level accomplished in this way makes the use of vibrator practical near employees.

Description: Type AC (Air Cushioned) vibrator weighs 2 lb, 11 oz and is 6-1/2" long by 1-1/2" wide. Design of the vibrator is such that vibration frequency and amplitude can be controlled separately to insure optimum



conditions for any particular application. Manufacturer also supplies a large number of conventional pneumatic vibrators available in 14 piston diameter sizes and 29 mounting styles.

Source: The Cleveland Vibrator Company, Dept. CP, 2706 Clinton Ave., Cleveland, Ohio, is the maker . . . or for more information check CP 6813 on handy form, pages 2 and 3.

Analyzes results of toxaphene use on crop and animal insects

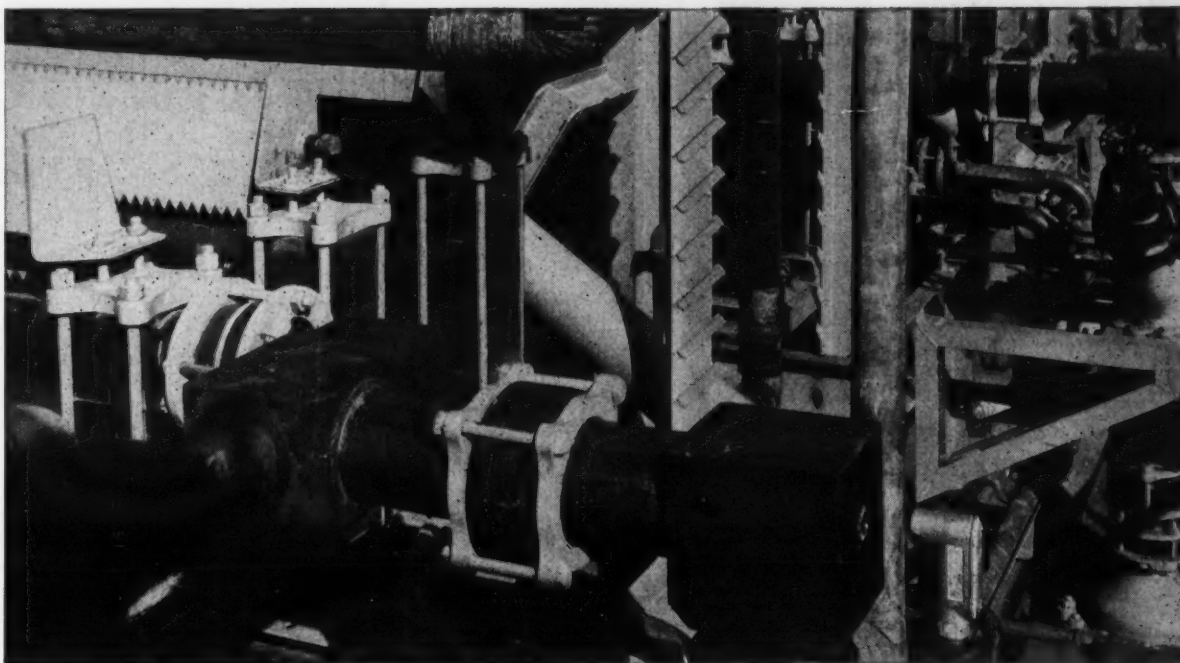
Toxaphene agricultural insecticides in their use as dusts, emulsifiable concentrates, oil solutions and wettable powders are covered in 24-page, illustrated publication. Contains brief history on compound with background on use of naval stores and final chlorination of camphene. Large sections are devoted to Federal and State recommendations on use of compound in control of cotton insects, livestock pests, alfalfa insects, grasshoppers, cutworms and armyworms, peanut insects and a variety of other insects. Included in the foregoing discussion is a map of expected grasshopper infestation in 1951 based on 1950 surveys.

Lists common and scientific names of insects mentioned and procedures applicable for determination of organically bound chlorine present. "Toxaphene Agricultural Insecticides" is issued by Naval Stores Department, Hercules Powder Company, Inc., Dept. CP, Wilmington, Delaware. When inquiring specify CP 6814 on handy form, pages 2 and 3.

SEPTEMBER, 1951

QUESTION:

What pipe handles ALL corrosives?



COURTESY OF TENNESSEE PRODUCTS AND CHEMICAL CORPORATION

ANSWER:

"KARBATE" BRAND IMPERVIOUS GRAPHITE

For conveying, processing and storing *all* types of corrosive liquids and gases, hot or cold, whole systems are now being built 100% with "Karbate" impervious graphite pipe, fittings, valves, pumps, heat exchangers, towers and other units needed. Here are the reasons:

★ When you use "Karbate" impervious graphite, you don't need to use a variety of corrosion-resistant materials.

★ "Karbate" impervious graphite pipe keeps production rolling. You don't have costly "down time" because of corrosion in the system. There is no loss of product.

PLUS FACTORS OF "KARBATE" IMPERVIOUS GRAPHITE PIPE:

- Both acid resistant and alkali resistant
- Light in weight, easy to machine and assemble
- No metallic contamination of product
- Immune to thermal shock

OTHER NATIONAL CARBON PRODUCTS

HEAT EXCHANGERS • PUMPS • VALVES • PIPING • TOWERS • TOWER PACKING • BUBBLE CAPS • BRICK • STRUCTURAL CARBON • SULPHURIC ACID CUTTERS • HYDROCHLORIC ACID ABSORBERS

The terms "Karbate" and "Eveready" are registered trade-marks of Union Carbide and Carbon Corporation

NATIONAL CARBON COMPANY

A Division of Union Carbide and Carbon Corporation
30 East 42nd Street, New York 17, N. Y.

District Sales Offices: Atlanta, Chicago, Dallas, Kansas City, New York, Pittsburgh, San Francisco

WHY BUY THIS ITEM?

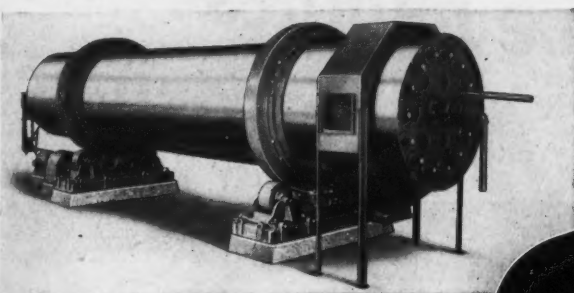
It gives you *double the usable light!*
It's *leakproof!*
It can't *stick, swell or jam!*
It delivers the *whitest, brightest light!*
It's the "Eveready" No. 1050 flashlight battery, made with the zinc electrode inside a carbon jacket — just the reverse of every other battery on the market.

Test it and . . . you always buy it!



When inquiring check CP 6815 on handy form, pgs. 2-3

WATER TUBE COOLER



Have a cooling problem on any type of dry granular material? Let our engineers help you solve it with a Davenport Rotary Water or Air Cooler. Write for our complete catalog.

DAVENPORT MACHINE
and FOUNDRY COMPANY

DAVENPORT 4

IOWA

DAVENPORT
De-watering Presses and Screens.

ROTARY
Steam Tube, Hot Air and Direct Fire Dryers.
Water Tube and Air Coolers.

When inquiring check CP 6816 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Calibrated absorbers speed routine checks . . .

radioactive emission absorption handled quickly

Uses: For routine checks of purity of radioactive isotopes.

Features: Since the 25 absorbers contained in test set are calibrated, absorption curves are obtained automatically.

Description: Absorbers range in value from 1.6 mg/sq cm to 1.5 gm/sq cm and are individually weighed. Weight per unit area is given, accurate to 0.1%, for each in a table attached to the inside lid of box. Absorbers are 1" in diameter and are made of aluminum foil cemented in aluminum rings.

Source: Development of Tracerlab, Inc., Dept CP, 130 High St., Boston 10, Mass. . . or for more information check CP 6818 on handy form, pages 2 and 3.

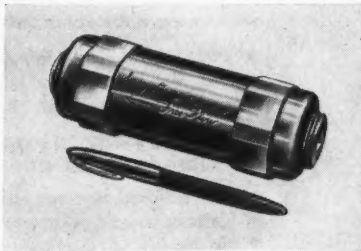
Stops pressure surges but allows full use in 1 second . . .

unimpeded flow in one direction; damping in the other

Uses: Eliminates damaging surges of pressure which occur in starting or stopping hydraulic equipment.

Features: Valve is designed to allow flow with low pressure drop in one direction. Any flow due to high pressure surges in the other direction is checked.

Description: Normally closed valve opens when pressure is applied to the inlet side. Flow through the valve accelerates until a rate is reached



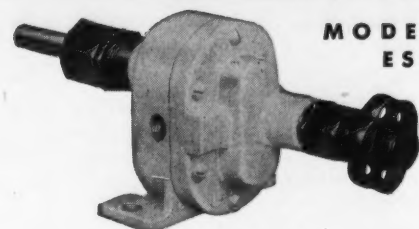
Surge damping valve allows normal flow, but stops surges of pressure quickly when they occur

which will maintain desired pressure at the outlet side. If flow stops, the valve immediately closes and is ready for the next cycle.

Action is carried out by a spool which is spring loaded, keeping the valve closed. When pressure is applied to

ERTEL STAINLESS STEEL SELF-PRIMING PUMP

For pumping corrosive liquids, chemicals, drugs, cosmetics, foods, syrups, wines, whiskeys, pharmaceuticals, vinegar, etc.



MODEL ESP

★ Capacities 3, 5, 10, 20 and 30 gpm. Perfect alignment of the minimum of moving parts. Has manual by-pass control valve to easily regulate pressure and flow rate. Available as illustrated or as complete assembly direct drive or belt driven. Please ask for Pump Bulletin #34.

ERTEL SERVICE: We invite you to make use of our consultation service. Our engineering staff is always available to help in solving your Liquid Handling problems.

ERTEL ENGINEERING CORPORATION
KINGSTON NEW YORK

Representatives in Principal Cities
MANUFACTURERS OF HIGH GRADE ERTEL ASBESTOS FILTER SHEETS
ASBESTOS SHEET FILTERS • CYLINDER TYPE DISC FILTERS
PYROGEN FILTERS • VACUUM BOTTLE FILLS • MIXERS • CAPPERS
CENTRIFUGAL AND SELF-PRIMING STAINLESS STEEL PUMPS
When inquiring check CP 6819 on handy form, pgs. 2-3



You Save
**TIME
MATERIALS
MONEY**

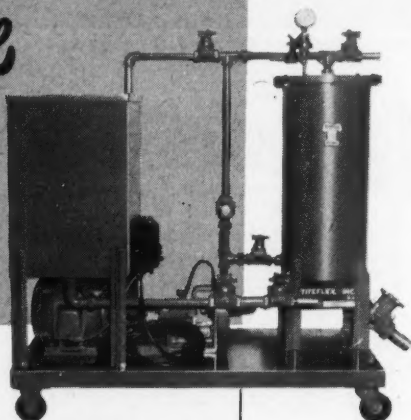
when you use

Titeflex FILTERS

Here's how you Save Time: The Titeflex backwash system cleans out all residue automatically in approximately 20 minutes without manual labor.

Here's how you Save Materials: Permanent filtering elements support cake. There is no need for costly replacements such as bags, pads, sheets, etc.

These Titeflex features, plus many others, add up to genuinely efficient lower-cost filtration . . . an easier method of handling a difficult mechanical problem. Get the complete Titeflex story!



WRITE FOR FREE CATALOG

Showing sizes, capacities and filtration areas of all Titeflex models.



TITEFLEX, INC.

509 Frelinghuysen Ave., Newark 5, N. J.

When inquiring check CP 6817 on handy form, pgs. 2-3

**FOR
QUICK
STARTS**



In steam heated processes, output is increased if air is vented from the steam space.

The rapid removal of both large volumes of air and condensate are features of the

**SARCO
THERMOSTATIC
STEAM TRAP**

The powerful thermostatic bellows permits the use of an OVER-SIZE orifice and this orifice is **WIDE OPEN** when the trap is cold.

No seats to change . . . regardless of steam pressure changes. Only one operating part . . . the dependable, one-piece thermostatic bellows made of phosphor bronze, monel or stainless steel.

For removing air and condensate from dryers, kettles, pans, cookers, etc., use Sarco No. 9.

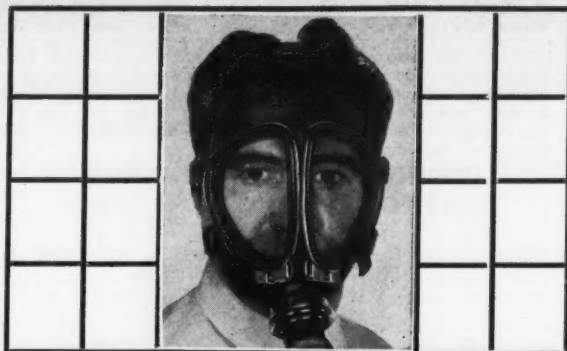
Write for Catalog 252.

505

SARCO SARCO COMPANY, INC.
Empire State Bldg., New York 1, N.Y.
SAVES STEAM SARCO CANADA, LTD., TORONTO 5, ONTARIO

When inquiring check CP 6820 on handy form, pgs. 2-3

CHEMICAL PROCESSING



ACME . the Only Gas Mask With the "PICTURE WINDOWS"

You never have that "jammed-in" feeling, wearing the Acme Full-Vision Gas Mask. Its patented, larger lenses are like picture windows, giving you full natural vision for that safe, unconfined feeling. When you walk, you can actually see your toes without bobbing your head. This factor alone makes Acme outstanding among gas masks . . . well worth looking into.

Write for the complete story on Acme Gas Masks for the chemical industry.

ACME PROTECTION EQUIPMENT CO.
3037 West Lake Street, Chicago 12, Illinois

When inquiring check CP 6821 on handy form, pgs. 2-3

New Benjamin EXPLOSION-PROOF Signals

EXTRA-STRONG
EXTRA-PENETRATING
SIMPLIFIED MAINTENANCE

New Benjamin Explosion-Proof Horns and Buzzers for hazardous atmospheric locations, feature important advancements that increase durability and signal penetration of existing noise levels and cut maintenance and operating costs.

NEW, EXPLOSION-PROOF CONSTRUCTION
Both new signals feature ample strength to withstand the tremendous pressures of internal explosions without breaking down or permitting flame, hot gasses or sparks to escape. All joints are deep-flanged and threaded to sufficient depth to prevent escape of flame.*

NEW, POWERFUL PENETRATING SOUND
Explosion-Proof Horn develops a distinctive signal, demanding instant recognition. The penetrating tone of the Explosion-Proof Buzzer is recommended for less noisy locations.

* Approved by the Underwriters' Laboratories for use in certain groups of Class I, II and III hazardous locations.

BENJAMIN
Signals
Sold Exclusively Through Electrical Distributors

When inquiring check CP 6822 on handy form, pgs. 2-3

SEPTEMBER, 1951



NEW, SIMPLIFIED MAINTENANCE
The horn-projector assembly is "plugged in" for easy installation. Entire assembly, including signal mechanism is removable without disturbing signal housing, by unscrewing threaded holding ring.

Send for **FREE DATA** on "Benjamin Industrial Signal Equipment", including complete specifications.
Benjamin Electric Mfg. Co.,
Dept. LL, Des Plaines, Ill.

PROCESSING EQUIPMENT

the inlet, this spool moves to an open position. Rate of spool movement is controlled by a small pressure responsive valve which, in turn, reacts to the difference between inlet and outlet pressures. Speed of operation is at least fast enough to take less time than surges would take to die of their own accord.

Oscillograph tests show that on a line normally operating at 3000 psi, a starting surge approaching 6000 psi was occurring before the damping valve was placed in operation. After the valve was added to the line a steady 3000 psi was reached in about 1 second without the pressure ever exceeding this value.

Two models are available. Industrial model (shown) may be had in 1/2 and 1" sizes for working pressures up to 5000 psi. A smaller, lighter aircraft model is available to fit 1/4, 3/8, 1/2, and 5/8" tubing. It can handle operating pressures up to 3000 psi.

Source: Maker is The Denison Engineering Co., Dept. CP, Columbus 16, Ohio . . . or for more information check CP 6823 on handy form, pages 2 and 3.

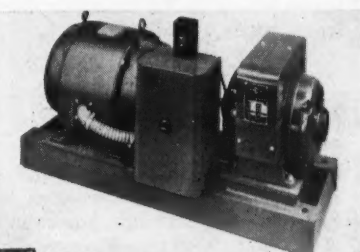
Supplies higher frequency for special tools . . .

motor-generator turns out 6 kw at 180 or 360 cycles per second

Uses: Supplies power for high cycle automatic hand tools such as grinders and buffers.

Features: Set provides 6000 watts of power at 180 or 360 cycles per second.

Description: Shown is a 6 kilowatt, 360 cycles per second, 3600 revolutions per minute generator. Similar units operate at other speeds and have various frequency and voltage

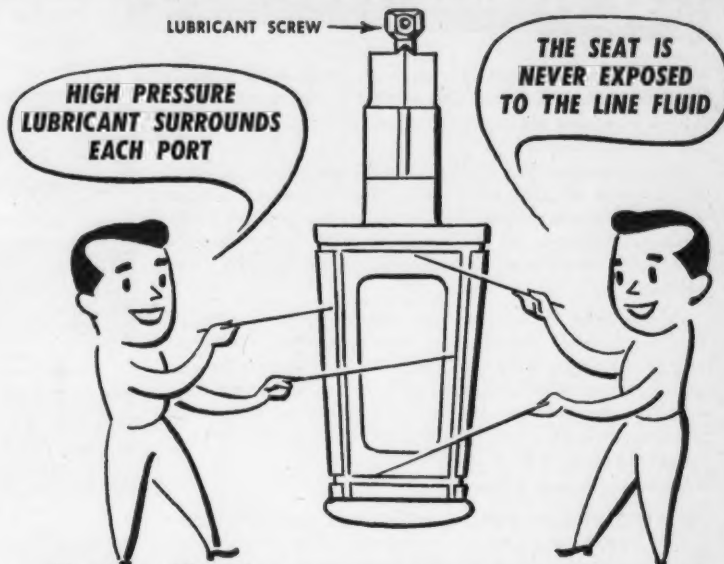


Supplies 360 cycle power

ratings. All of the sets are self exciting and have built-in voltage regulation.

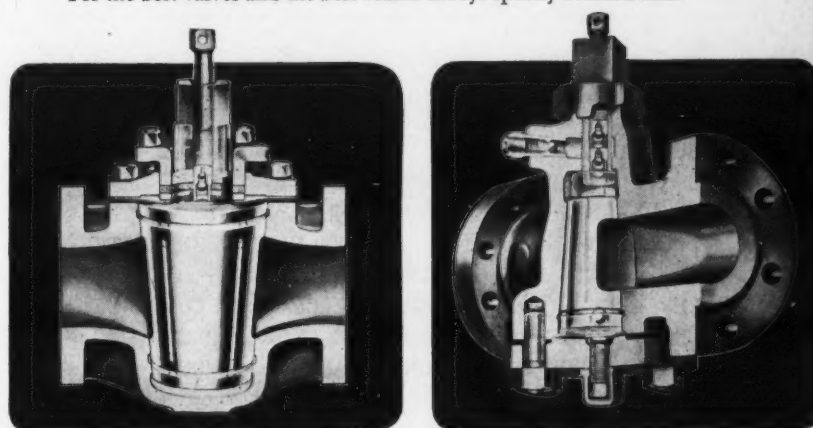
Source: Manufactured by the Electric Machinery Mfg. Company, Dept. CP, Minneapolis 13, Minn. . . or for more information check CP 6824 on handy form, pages 2 and 3.

CAN'T SPRING A LEAK IN THIS AMAZING VALVE



Hydraulically PRESSURIZED AGAINST LEAKAGE

More than 6,000,000 Nordstrom valves are now in service in the oil, gas, chemical processing and allied industries. Where valuable fluids are concerned Nordstrom has the reputation of effecting tremendous savings in cost by their leak proof characteristics and trouble-free performance. For the best valves and the best values always specify Nordstroms.



NORDSTROM STANDARD TYPE

NORDSTROM HYPRESEAL TYPE

Nordstrom valves are available in semi-steel, steel, stainless steel and special alloys for all types of services. Sizes: 1/2 to 34-inch. Pressures from vacuum to 15,000 lb. test. Temperatures from -150°F to +1000°F.

Nordstrom
LUBRICATED VALVES

Rockwell Manufacturing Company

400 N. Lexington Ave., Pittsburgh 8, Pa.

Offices in all principal cities

When inquiring check CP 6825 on handy form, pgs. 2-3



REQUEST
LITERATURE

Transfer HEAT 10 Times FASTER

You can transfer heat approximately *ten times faster* with Electro Silicon Carbide, than with fire clay refractories. Think what that means in time and fuel economy and in increased production!

More than that, you can bank on Electro Silicon Carbide Refractories to stand up under violent shocks of sudden and extreme temperature changes, to carry heavier loads without danger of slumping and warping, and to absorb and hold more heat for faster dissipation and for later release.

Our bulletin, B-749, tells more and explains why. With so much to gain, why not send for a copy today; or, better still, let us send a copy by a Field Engineer so that he can give you competent opinions at job-side? Cooperation is wholly voluntary on our part and infers no obligation whatever on your part. You'll probably find that we can produce exactly what you need.

**(Unique and Versatile Artificial Mineral)*

ELECTRO REFRACTORIES & ABRASIVES CORPORATION

344 Delaware Avenue • Buffalo 2, New York

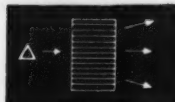
Plants: Buffalo, N. Y. and P. Q., Canada
Regional Warehouse: Los Angeles 58, Cal.

Electro SPECIAL REFRACTORIES

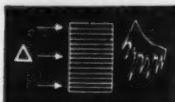
When inquiring check CP 6826 on handy form, pgs. 2-3



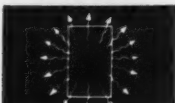
SILICON CARBIDE* REFRACTORIES



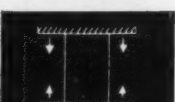
THERMAL CONDUCTIVITY



THERMAL SHOCK RESISTANCE



HEAT STORAGE



HOT STRENGTH

PROCESSING EQUIPMENT

**Powerful, narrow beam
comes from 300 watt
spotlight . . .**

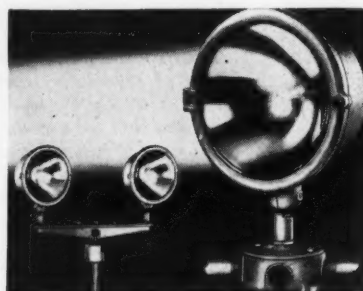
anti-corrosive cast aluminum
model for outdoor use

Uses: Protective area lighting of vulnerable spots like railway sidings, switch and loading areas, shipyards, docks, outdoor equipment and installations of all kinds.

Features: Made of corrosion-resistant, heavy duty cast aluminum, light can be supplied with weather-proof junction boxes, wall brackets, wiring troughs, etc.

Description: Stonco No. 56 spotlight provides 100,000 candlepower with a 300 watt rating. Design results in a long-throw, oval shaped, narrow beam.

Spotlight is mounted on a universal, cast aluminum swivel arm so that it may be adjusted to any angle. Clusters of lights, up to five, can be



Each spotlight throws a 100,000 candlepower beam. Power rating is 300 watts per light

mounted together, providing light over a wide area. All wiring is totally enclosed and approved by Underwriters Laboratories.

Source: Manufactured by Stonco Electric Products Company, Dept. CP, Elizabeth, N.J. . . . or for more information check CP 6828 on handy form, pages 2 and 3.

Fluid power pumps outlined

Four-page, two-color bulletin describes, specifies, and illustrates, with half-tones and drawings, pumps in the range from 3000 to 5000 psi. These pumps are classified as constant delivery and are used in power applications such as lifting, ramming, press-work and the like. An axial piston rolling action is used. Bulletin 46601 is issued by The Oilgear Company, Dept. CP, 1560 W. Pierce St., Milwaukee 4, Wis. When inquiring specify CP 6829 on handy form, pages 2 and 3.

GAYCO CENTRIFUGAL SEPARATORS

GAYCO Separators, equipped with the adjustable centrifugal sizing fan — an exclusive GAYCO feature — make closer separations. Closer separations bring about higher production through efficient removal of the fines made by the mill. Closer separations bring about higher quality products by eliminating all undesirable oversize.

"TIMKEN BEARING EQUIPPED"
GAYCO brings you all these:

Range 60 to 400 mesh		Cleaner Tailings
greater capacity		Uniform Products
25 to 30% greater production		Slow speed for slow wear
		Quick and easy adjustments

If you have an exceptionally hard separating problem,
TRY THE GAYCO.

Universal Road Machinery Co.

Robert M. Gay-Division

Factory and Laboratory, Kingston, N. Y.

117 LIBERTY STREET

NEW YORK 6, N. Y.

Canadian Representative: F. H. Hopkins & Co., Ltd.,
8500 Decarie Blvd., Montreal, Que.

When inquiring check CP 6830 on handy form, pgs. 2-3

Bucket Elevator Chain Saves \$10,000

CHEMICAL MANUFACTURER HANDLING PYRITES ORE BY BUCKET ELEVATOR HAD TO REPLACE MALLEABLE IRON CHAIN EVERY TWO WEEKS. COST \$336 PER CHANGE. THEN INSTALLED BEAUMONT "BEAUCALLOY" CHAIN AT TOTAL COST OF \$613. NINETY-FIVE WEEKS LATER THIS CHAIN STILL GOING STRONG. NOT ONE LINK REPLACED. HAD FORMER REPLACEMENTS CONTINUED, CHAIN COSTS ALONE WOULD BE CLOSE TO \$10,000. SEND COUPON TODAY FOR CATALOG 10-B ON "BEAUCALLOY" CHAIN.



BEAUMONT BIRCH COMPANY

1516 RACE ST., PHILADELPHIA 2, PA.

NAME _____

COMPANY _____

ADDRESS _____

When inquiring check CP 6827 on handy form, pgs. 2-3

Practical Lab Men Like Their

Despatch OVENS

For development work
and new product testing,
Minn. Mining technicians
approve the wide tem-
perature range . . . vari-
ety of raw materials han-
dled . . . capacity for
large samples.



- Air velocity control
- Guaranteed heat elements — 2700 to 12,000 Watts
- Precision indicating control
- Six models in wide range of capacities
- Accurate—speedy—rugged

**Manufacturers of Ovens
for all purposes**



Minnesota Mining & Manufacturing Company uses Despatch "V" Ovens in research and control of "3M" products and applications. Users of Despatch Ovens from its earliest days, this well-known company now has scores of them in its various departments. For information on how Despatch can be put to work on your laboratory and production problems, write for Bulletin No. 106.

343 Despatch Building
Minneapolis 14, Minnesota

When inquiring check CP 6831 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

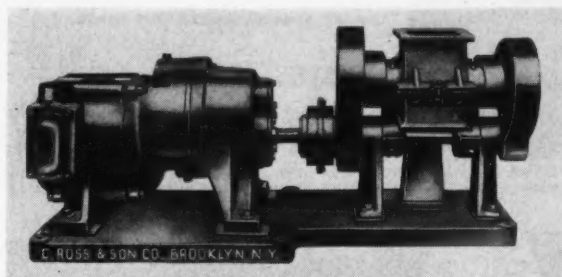
Rapid mixing and shearing imparted by sigma stirrers of small mixer-kneader . . .

this unit designed for use on batch and lab mixes

Uses: For use as a pilot model in running test batches and in laboratory applications.

Features: Steam jacketed trough permits cooling or heating of material and is built in two sections for easy dismantling and cleaning. Stirrers are of the "sigma" type for more rapid mix with good shearing action and dispersion of materials, and are easily detached for cleaning.

Description: Steam jacketed heavy duty, one-pint kneader and mixer. Direct motor driven with a 1/2 hp motor. Unit is easily tilted by hand through a balanced arrangement. Cut steel gears are used throughout for



One-pint steam-jacketed kneader-mixer

quiet, efficient operation. Kneaders are furnished with either cast iron or stainless steel construction. Special covers, additional types of stirrers and two-speed motors are optional extras. Unit also available in 1 qt size.

Source: Model 41 kneader-mixer is made by Charles Ross & Son Co., Dept. CP, 83 Emerson Place, Brooklyn 5, N. Y. . . . or for more information check CP 6832 on handy form, pages 2 and 3.

Describes 29 reports on German patent and research work

Twenty-nine translations of German patent applications and research dealing with hydrocarbons are available. Bulletin lists and describes these translations. Three important patent applications deal with "Process for Obtaining a Predominant Proportion of Diesel Fuels in Carbon Monoxide Hydrogenation," "Process for Synthesizing Antiknock Benzines," and "Process for Cracking Heavy Hydrocarbons." The latter presents a method giving high yields of low boiling aromatics without formation of cracking residue or coke.

Research works report on successful development of a zinc alloy catalyst for dehydrogenating cyclohexanol and its homologues, preparations of addition compounds of piment, camphene and dipentene with carbon monoxide and hydrogen, and other subjects. Other patent applications deal with production of propylene and butylene from carbon monoxide and hydrogen without formation of methane or ethane, diesel fuels using ketone peroxides and their polymers as additives, and equally significant topics. Most of the work was done for large industrial firms such as Ammoniakwerk Merseburg, Badische Anilin- & Soda-Fabrik, Ludwigshafen, etc.

Bulletin 54 listing these translations is issued on letterhead request to Research Information Service, Dept. CP, 509 Fifth Ave., New York 17, N. Y.

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When inquiring check CP 6833 on handy form, pgs. 2-3



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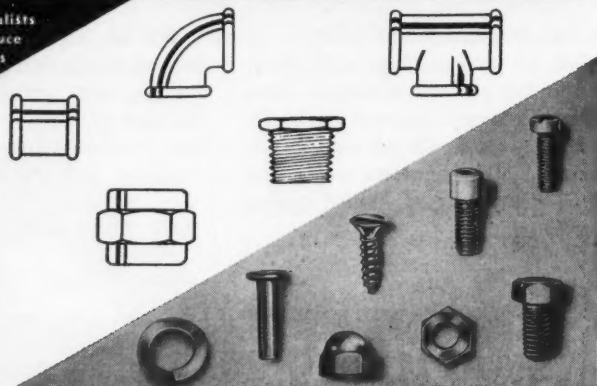
District Offices: CHICAGO • HOUSTON • NEW YORK • PITTSBURGH
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When inquiring check CP 6834 on handy form, pgs. 2-3

FOR YOUR STAINLESS STEEL FITTINGS AND FASTENERS IT'S ALLMETAL FOR QUALITY AND DELIVERY

Allmetal's fasteners and fittings are stocked in types 304 and 316.
Specials to order. All made right by Allmetal.

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When inquiring check CP 6835 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

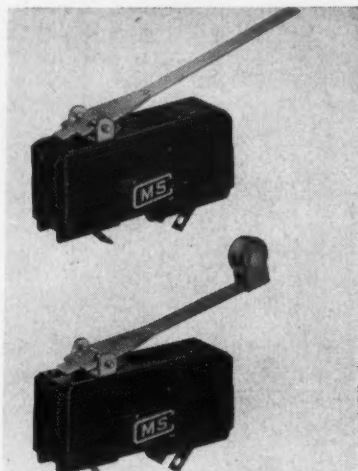
**High capacity switch
requires less force
in operation . . .**

addition of lever actuation
broadens basic switch line

Uses: In installations requiring lower operating forces than that offered by flexible leaf actuated switches.

Features: Operating force range of 2½ oz. max to 6 oz. max.

Description: Switches listed by UL for ¾ hp, 115 v, AC; 1-½ hp, 230 v, AC; 20 amp 125, 250, or 460 v, AC; 10 amp, 125 v, AC "L" ("L" suitable for controlling tungsten filament lamp



Choice of long straight lever or
long lever with roller

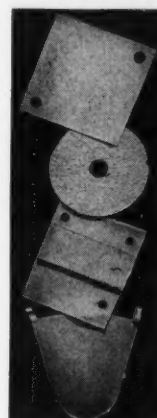
loads on AC circuits). This series of switches has a 0.020 inch contact separation and contact arrangement is single-pole, double-throw. Three types of terminals are available: solder lugs, integral screw terminals, and side facing binder head screw terminals.

Source: Made by Micro Switch, Dept. CP, Freeport, Ill. . . . or for more information check CP 6836 on handy form, pages 2 and 3.

Supplements catalog currently used

All boiler equipment not included in current catalog of April 15, 1951 is discussed in 20-page supplement. Diagrams, specifications and descriptive material are given for boiler water feeders, make-up water feeders for receivers, low water fuel cut-offs, and float operated switches. Also, small float valves, solvent still regulators, electrical switches and flow switches. July 25, 1951 Supplemental Catalog is issued by McDonnell & Miller, Inc., Dept. CP, 3500 N. Spaulding Ave., Chicago 18, Ill. When inquiring specify CP 6837 on handy form, pages 2 and 3.

FILTER MEDIA for Chemical Processing



FILTER PAPER

LABORATORY . . . INDUSTRIAL . . . Made from finest materials for accuracy and dependability . . . light and heavy weights . . . slow and fast filtering speeds . . . large stock maintained . . . cut to any size and pattern . . . samples furnished for experimental purposes.

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Cottons, wools, felt, glass, nylon, silk, vinyon, saran, metal mesh and many other synthetic materials cut and sewn in all shapes and sizes . . . many weaves, weights and finishes.

ASBESTOS PADS

Quality filtering pads furnished in a range of grades varying in porosity and filtering characteristics. Sizes and shapes for all needs.

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WRITE TODAY for further information and samples!



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The FILTER PAPER CO.

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When inquiring check CP 6838 on handy form, pgs. 2-3

ABBÉ ENGINEERING

That's Interesting!

100% Scrap Recovery
Recovering Ceramic Coating Scrap
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Abbé Dispersion Mixer

Sifting a Cloud . . .

Want More Sifting in Less Space?

The current issue of "Abbé Engineering Millings" shows how you can get material increases in sifting output in just a fraction of the floor space required by ordinary methods. It also covers improved mixing techniques for fluids and pastes.

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NEW YORK 7, N. Y.
Makers of
ABBÉ ENGINEERING Ball, Pebble and Jar Mills

When inquiring check CP 6839 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

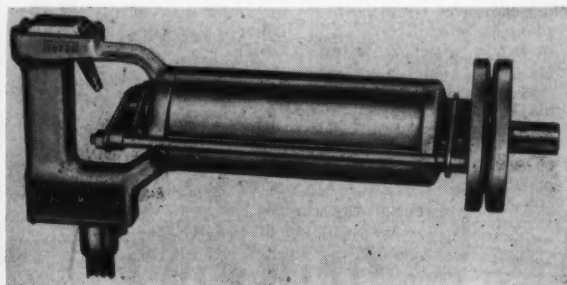
Automatic rotation of drill bit speeds quantity hole drilling . . .

unit has 1-1/8" hole drilling capacity; piston rotation is 3,600 rpm

Uses: For highspeed hole drilling in concrete, brick and stone. Also in installing machinery, hanging heavy pipe and ducts.

Features: Automatic rotation of the carbide-tipped, spiral fluted drill speeds up hole drilling, eliminates manual turning of the drill chuck and reduces fatigue. This unit has the power for quantity hole drilling so often required in plants.

Description: Model 17-RO has a 1-1/8" drilling capacity and weighs 2-1/2 lb. Complete outfit includes 15' cable,



Electromagnetic hammer drill

dry plate controller, drift pin, adapter for 1/4 to 5/8" drill bits, all packed in a sturdy carrying case. Drill operates on 110 or 220 v AC.

Source: Model 17-RO drill is built by Syntron Co., 111 Lexington Ave., Homer City, Pa. . . or for more information check CP 6840 on handy form, pages 2 & 3.

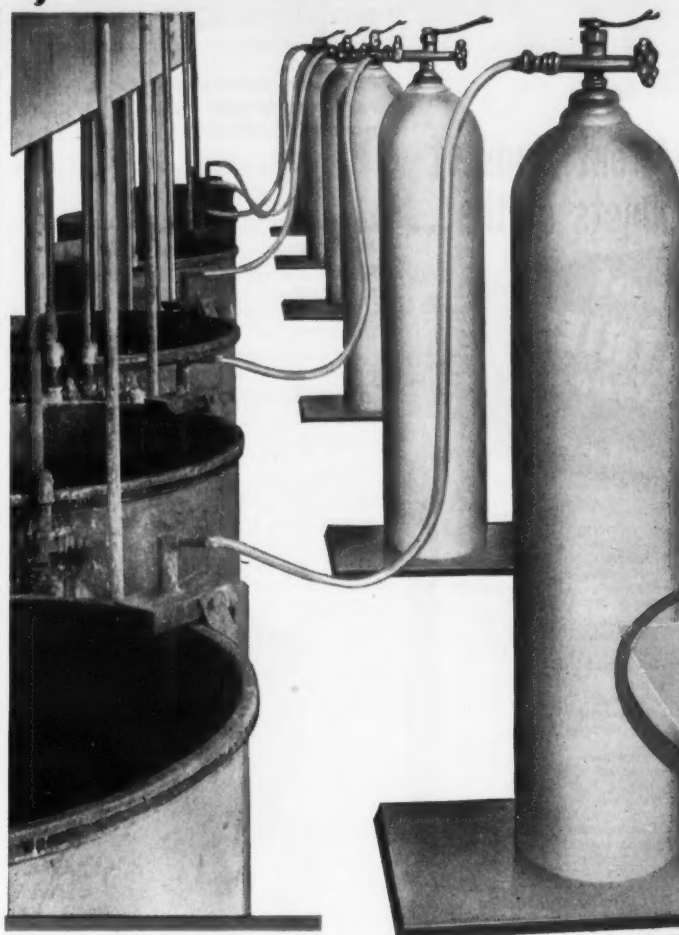
ASTM illustrated booklet reviews chemical spectroscopy

Profusely illustrated 52-page booklet discusses the development and use of spectroscopic methods in analytical control. Use of both emission and absorption spectra procedures are outlined and the limitations of each method indicated. In colorimetry and color description, application of these methods is considered as well as the use of spectrophotometer procedures in infrared and ultraviolet regions of the spectrum.

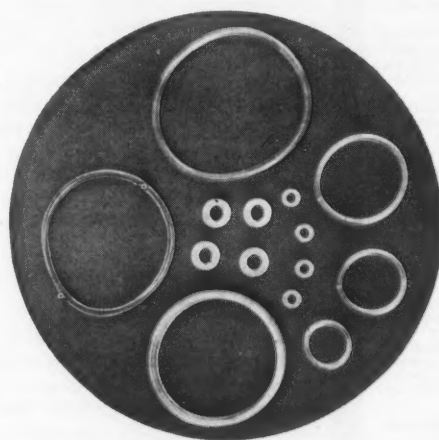
Part is devoted to the field of emission spectroscopy, including the development of rapid analysis procedures and recent advances in photoelectric recording instruments. Topic heads are: emission spectroscopy; absorption spectroscopy; infrared spectroscopy; visible and ultraviolet spectroscopy; standards; and, references. Approach to the subject is purposely elementary so that material can be easily followed.

Theory treated involves both the atomic phenomena and changes in spectral aspects due to molecular characteristics. Homologues and closely related compounds, for example, are compared on the basis of their spectrum. Effects of temperature and pH are shown graphically. Some historical material is given, chiefly as a guide to the literature. The actual section devoted to references covers the field well. Text is illustrated with 60 line drawings, halftones, and graphs. To obtain "Chemical Spectroscopy" remit \$1.35 direct to American Society for Testing Materials, Dept. CP, 1916 Race Street, Philadelphia 3, Pa. When inquiring specify CP 6841 on handy form, pages 2 and 3.

SEPTEMBER, 1951



TYGON TUBING as used by the Eagle-Picher Co. to convey chlorine gas from cylinders to tanks containing metallic oxides—a truly severe test of chemical resistance.



TYGON extrusions (tubing, channel and solid cord) are also highly effective as chemically resistant gasketing in all types of process equipment requiring positive and enduring seals.

To
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CORROSIVE
CHEMICALS**

TYGON
flexible plastic
TUBING

TODAY'S better way to conduct corrosive liquids or gases is with rugged, heavy-duty TYGON TUBING. This flexible, plastic pipe, in sizes up to 2" ID, is being used extensively as temporary or permanent acid and alkali lines; as inlet and discharge ports for chemical pumps and filters; as drainage and supply lines to and from reactors and storage tanks; and as a safe, efficient conducting medium in many other applications.

Available in six standard formulations to meet a wide range of chemicals and other operating conditions, TYGON TUBING, ranging from crystal clear to glossy black, is highly resistant to acids and alkalis, oils and greases, alcohols and water. Its minimum extractability permits use with the most sensitive solutions. Its lastingly smooth surfaces afford faster flow and quicker, easier cleaning. Its full flexibility makes even the most difficult installation simple. Its high strength, abrasion resistance, and non-aging characteristics insure long service life.

Why not solve the gas or liquid transmission problems in your plant by writing, today, for detailed information and technical data on TYGON TUBING? Ask for free Bulletin T-77. Address: U. S. STONEWARE, TALLMADGE SQUARE, AKRON 9, OHIO.

When inquiring check CP 6842 on handy form, pgs. 2-3

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and Purifying
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and
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Ovens, Electric,
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Fittings
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Foil,
Crucibles,
Laboratory
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Hydraulic
Pressure Relief
and Rupture
Relief
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Publishers
Pulverizers
Pumps
Pyrometers
Raw Material
Rayon
Equipment
Recording
Instruments
Refractories
Refrigerating
Equipment
Regulators,
Pressure and
Temperature
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Equipment
Rust Proofing
Safety
Equipment
Salt
Scales

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Inclined,
Vibrating
and
Gyratory
Screens—other
Sealing
Machines
Separators
Sheet Metal
Work
Sieves,
Laboratory
Sifters
Silica
Sinks,
Laboratory,
Acid Proof
Sizers
Solvent
Recovery
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Whatever your problem — equipment, materials, supplies or services — you are sure to find a wealth of practical answers here. Technical men in 381 informative exhibits will be on hand to discuss your present difficulties and help you with future projects. Plan now to attend — you can't afford to miss it.

MANAGEMENT INTERNATIONAL EXPOSITION COMPANY

When inquiring check CP 6843 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Face and head protector
features broad vision,
normal audibility . . .

headgear adjustable to all head
sizes

Uses: In industrial procedures such as chipping, grinding, spot welding, scaling, metal sawing, buffing, moderate heat operation, and protection against flying particles of metal or glass.

Features: Greater coverage area gives protection to the face, head, neck and ears. Cross ventilation minimizes breathing of devitalized air.

Description: Made of vulcanized black fibre, extending over the front of the head and with protection to the neck. Top and bottom arcuate fiberdomes are ventilated with brass screen



Screen ventilation provided in the top, bottom and sides allows for free air currents

grommets. Sideshields are .015 gauge, 18 mesh galvanized wire screen, reinforced with aluminum binding. Window is cellulose acetate, extra heavy gauge (.060") for impact resistance. Size is 6" x 9".

Source: Industrial Products Co., Dept. CP, 2820 N. Fourth St., Philadelphia 33, Pa. . . or for more information check CP 6844 on handy form, pages 2 and 3.

Deals with diversified line of products

Three-color folder presents wide range of equipment and special products manufactured. Illustrated and listed are liquid control systems—distilling, filtering, dehydrating and metering equipment; gas fired incinerators; automotive test equipment—exhaust analyzers, vacuum gauges; and temperature-altitude-humidity simulating units. "1001 Ways" is issued by Bowser, Inc., Dept. CP, Fort Wayne 2, Ind. When inquiring check CP 6845 on handy form, pages 2 and 3.

WHAT'S IN THIS PIPE?

YOU KNOW WHAT'S IN THIS ONE

CITY GAS

YOU CAN TELL AT A GLANCE
WITH
QUIK-LABEL PIPE MARKERS

Identify every pipe in your plant quickly and inexpensively with Brady Pipe Markers. They give you a uniform system of identification based on ASA Standard A13. Anyone can apply and everyone can identify the pipe contents and direction of flow. Cut maintenance time. Make your plant a safer place to work. Over 235 different markers in stock. Specials made to order.

QUIK-LABELS come on handy dispenser cards. They are printed in large black letters on approved ASA background colors. Applied in a jiffy—they stick without moistening. Use indoors or outdoors. Cost only a few cents per marker.

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DISTRIBUTORS IN OVER 125 PRINCIPAL CITIES

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W.H. **BRADY** COMPANY

1625 E. SPRING STREET • CHIPPEWA FALLS, WIS.

When inquiring check CP 6846 on handy form, pgs. 2-3

**NEW
PERMANENT
NON-SLIP**

FIRM-GRIP
Genuine
NEOPRENE LATEX
GLOVES

✓ Permanent NON-SLIP on all 5 Fingers and Palm. Highly efficient embossed surface is integral part of glove.

✓ Impregnable to ACIDS, CAUSTICS, OILS.

✓ Curved FINGERS for Comfort and Easy Use.

No. 5740-5 LONG GAUNTLET
Length 14", Gauge .030 to .040
Sizes 9, 10, 10½, 11, 12

No. 5720-5 LIGHT DUTY
Length 10½", Gauge .017 to .020
Sizes 7, 7½, 8, 8½, 9, 9½, 10, 11

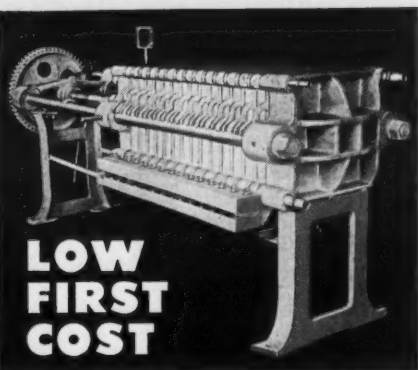
★ Write for sample and prices

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AKRON 9, OHIO

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Merchandise Mart, Chicago

When inquiring check CP 6847 on handy form, pgs. 2-3

CHEMICAL PROCESSING



**LOW
FIRST
COST**

SPERRY FILTER PRESSES

And that's just the beginning of savings.

Sperry Plate Filter Presses offer substantial economies all along the line. Labor cost is low. Economy in floor space and head room. Low depreciation. And this type of filtration equipment handles the widest possible range of applications at maximum efficiency. Plate filter presses—the Sperry type—are the most widely used filters in industry today. Check your own filtration problem with Sperry. Send samples of your material for a test run and estimate. No obligation.

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BATAVIA, ILLINOIS • Filtration Engineers for over 50 years

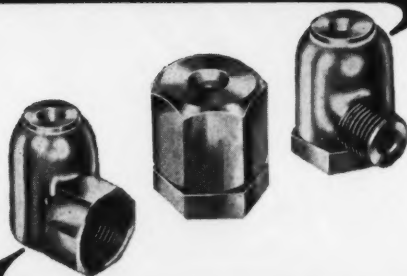
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**SPERRY
FILTER PRESSES**

When inquiring check CP 6848 on handy form, pgs. 2-3

MARLEY NOZZLES are *First* choice in CHEMICAL PROCESSING



Chemical processing plants all over the world pick MARLEY NOZZLES for their outstanding efficiency in providing maximum break-up of water at lowest pressures. Three designs are available . . . ONE PIECE, TWO PIECE, ATOMIZING. None have moving parts . . . All meet specific needs. Write for Bulletin SN3-50 today.

THE **MARLEY** COMPANY, INC.
KANSAS CITY 15, KANSAS

When inquiring check CP 6849 on handy form, pgs. 2-3

SEPTEMBER, 1951

PROCESSING EQUIPMENT

One third lighter transformers stand 80°C temp rise at 60 cps . . .

temp stable insulation, improved core steels allow the change in size and weight

Uses: As well as currently available general purpose transformers, the line will include 32 v, boosting and bucking, specially tapped, and autotransformers.

Features: Use of inorganic insulation and special core steels has permitted size and weight reduction while raising allowable temperature rise to 80°C (over 40°C ambient).

Description: Dry-type transformers will use class B inorganic insulation. For single phase, 60 cps operation, the design will provide an average weight reduction of about 30% throughout the line. Actually some of the transformers will weigh less than half as much as the units they replace. In all cases they will be smaller than the conventional models.

Size reduction is primarily due to the use of a grain oriented cold-rolled silicon steel which will permit a higher flux density without increasing core losses. This means not only that a smaller core can be used, but less wire is needed to wind the transformer. The design was chosen as a means of manufacturing the maximum number of transformers from a limited supply of critical materials.

Manufacturer contemplates no change in the design of transformers with ratings lower than 3 kva since increasing the temperature in that rating range does not materially reduce the amounts of critical materials needed nor does it provide significant reductions in size or weight.

Source: Development of General Electric, Dept. CP, Schenectady 5, N. Y. . . . or for more information check CP 6850 on handy form, pages 2 and 3.

Gauge never touches material while measuring thickness

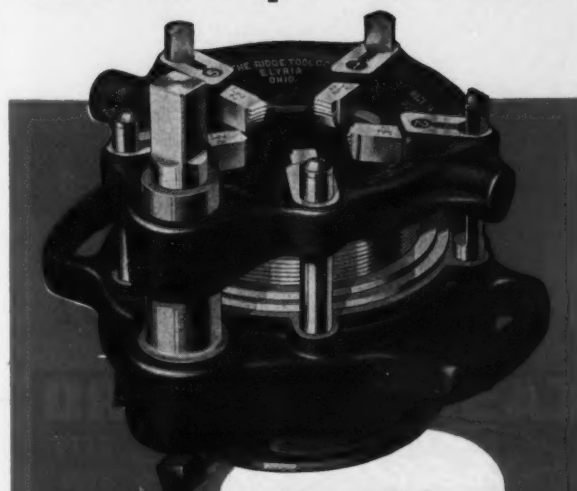
Four-page, two-color bulletin illustrates, describes, and discusses a recording thickness gauge applicable to sheet metal, plastics, paper, textiles, and other materials in sheet or roll form. Gauge operates by determining how much of a beta ray beam is lost in travelling through the material tested. The instrument is reported to be extremely accurate and readings are not affected by moisture, color, or other extraneous characteristics. A great advantage of the operation is that although the material can be constantly measured (while passing through process rolls) there is no actual contact of any mechanical part with it. This permits its use with sticky, sensitive, or thin material.

Bulletin BG-1 covering the Beta Ray Gauge is issued by Industrial Nucleonics Corporation, Dept. CP, 1205 Chesapeake Ave., Columbus 12, Ohio. When inquiring specify CP 6851 on handy form, pages 2 and 3.

Running-time recorder shown

Bulletin describes running-time recorder and gives information concerning application to presses, factory machinery, refrigerators, conveyors, furnaces, and other equipment. It is liberally illustrated with photographs of various models, reproductions of chart records, and operation drawings. Photographs of several installations of the instrument are also included. Bulletin OP1504 is issued by The Bristol Company, Dept. CP, Waterbury 20, Conn. When inquiring specify CP 6852 on handy form, pages 2 and 3.

Easier to Handle this **RIGID** Geared Pipe Threader



**No. 4P is
easy to carry,
to put on a pipe**



● You'll like the balanced loop handles that make it easy to swing the 4P around where you want it. Making it still more of a work-saver, mistake-proof workholder sets to size *before* you put it on pipe—only one screw to tighten, no bushings to fool with. 4 sets of 5 high-speed steel chaser dies give quick, clean threads on 2½", 3", 3½" and 4" pipe. Ratchet handle furnished—for power threading use with **RIGID** Universal Drive Shaft and Power Drive. Save your muscles—buy this easier-to-handle **RIGID** 4P at your Supply House.

RIGID

★ **Work-Saver Pipe Tools** ★

THE RIGID TOOL CO. - SCRIPPS, OHIO

When inquiring check CP 6853 on handy form, pgs. 2-3

Put these **TROUBLEMAKERS** On Ice in Your Plant



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BULLETIN 962
ON THE

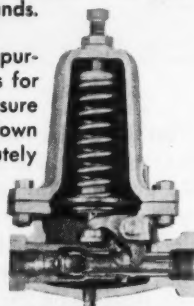
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VALVES

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When inquiring check CP 6854 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

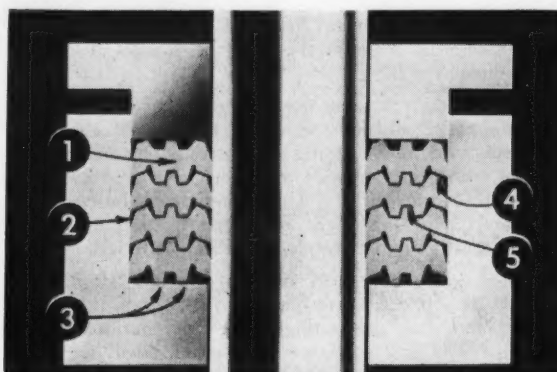
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Source: A product of Johns-Manville, Dept. CP, 22 E. 40th Street, New York 16, N. Y. . . or for more information check CP 6855 on handy form, pages 2 and 3.

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Nine-page booklet, with 16 illustrations, is a reprint based on detailed technical papers presented at the Steel Founder's Society of America National Technical and Operating Conference. Data on technical developments are given. Numerous examples of cast-weld construction show cases of metal conservation, production economies, improvements in functional design, and other engineering gains. National Conference Reprint is issued by Steel Founder's Society of America, Dept. CP, 920 Midland Bldg., Cleveland 15, Ohio. When inquiring specify CP 6856 on handy form, pages 2 and 3.

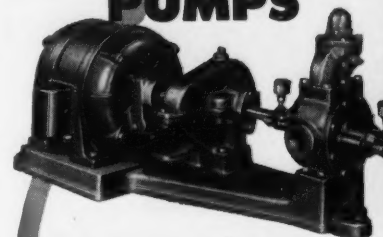
Convention & Exhibit Schedule

Sept. 16-19. American Institute of Chemical Engineers, Regional Meeting, Sheraton Hotel, Rochester, N. Y.

Sept. 17-18. National Mineral Feeds Association, Inc., 1951 Annual Convention, Bismarck Hotel, Chicago, Illinois.

Oct. 1-4. Industrial Packaging and Materials Handling Exposition, 6th Annual Meeting, Public Auditorium, Cleveland, Ohio.

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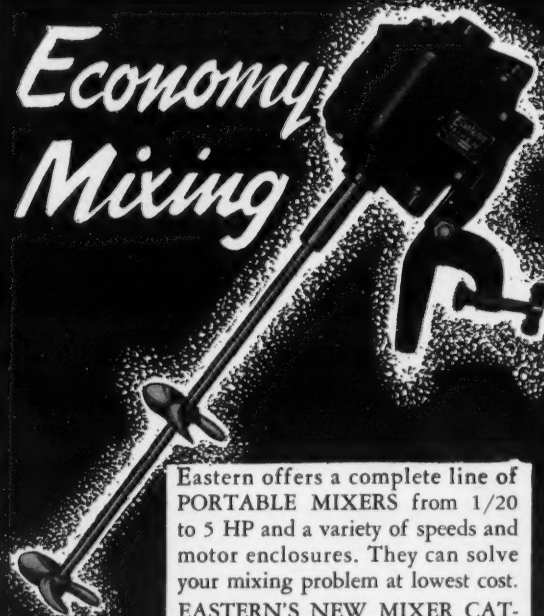
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Tallow
Tar
Tomatoes
Yeast

When inquiring check CP 6857 on handy form, pgs. 2-3

Economy Mixing



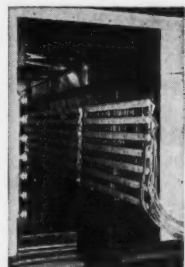
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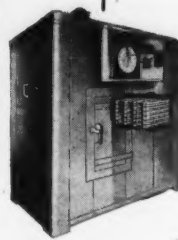
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SEPTEMBER, 1951

Convention & Exhibit Schedule

(Continued from preceding page)

Oct. 8-10. American Oil Chemists' Society, Fall Meeting, Edgewater Beach Hotel, Chicago, Ill.

Oct. 8-12. National Safety Council, 39th National Congress and Exposition, Hotel Stevens, Chicago, Ill.

Oct. 18-20. American Chemical Society and Southern Association of Science and Industry, Southwide Chemical Conference, Wilson Dam, Ala.

Oct. 23. Association of Consulting Chemists and Chemical Engineers, Annual Meeting, Shelburne Hotel, New York, N. Y.

Oct. 29-31. National Paint, Varnish and Lacquer Association, Chalfonte-Haddon Hall, Atlantic City, N. J.

Nov. 1-3. Federation of Paint and Varnish Production Clubs, Chalfonte-Haddon Hall, Atlantic City, N. J.

Nov. 5-8. American Petroleum Institute, Annual Meeting, Chicago, Ill.

Nov. 5-8. Refrigeration Equipment Manufacturers Association, 7th All-Industry Refrigeration and Air Conditioning Exposition, Navy Pier, Chicago, Ill.

Nov. 26-Dec. 1. 23rd Exposition of Chemical Industries, Grand Central Palace, New York, N. Y.

Dec. 2-4. Chemical Specialties Manufacturers Association, Annual Meeting, Mayflower Hotel, Washington, D. C.

Dec. 2-5. American Institute of Chemical Engineers, Annual Meeting, Chalfonte-Haddon Hall, Atlantic City, N. J.

1952

Jan. 14-17. Plant Maintenance Show, Convention Hall, Philadelphia, Pa.

Jan. 16-18. The Society of Plastics Engineers, Inc., 8th Annual National Technical Conference, Edgewater Beach Hotel, Chicago, Ill.

March 10-14. National Association of Corrosion Engineers, 1952 Annual Conference and Exhibition, Buccaneer Hotel, Galveston, Tex.

March 11-14. The Society of the Plastics Industry, Inc., Fifth National Plastics Exposition, Convention Hall, Philadelphia, Pa.

March 16-19. American Institute of Chemical Engineers, Regional Meeting, Biltmore Hotel, Atlanta, Ga.

April 7-9. The American Society of Lubrication Engineers, Seventh Annual Meeting and Lubrication Show, Hotel Statler, Cleveland, Ohio.

April 9-11. The Society of the Plastics Industry, Inc., Seventh Annual Technical Session, SPI Reinforced Plastics Division, Edgewater Beach Hotel, Chicago, Ill.

May 6-9. Scientific Apparatus Makers Association, Annual Meeting, Edgewater Beach Hotel, Chicago, Ill.

May 11-14. American Institute of Chemical Engineers, Regional Meeting, French Lick Springs Hotel, French Lick, Ind.

Sept. 4-6. American Institute of Chemical Engineers, Regional Meeting, Palmer House, Chicago, Ill.

Dec. 7-10. American Institute of Chemical Engineers, Annual Meeting, Cleveland Hotel (headquarters) and Carter Hotel, Cleveland, Ohio.

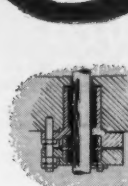
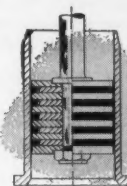
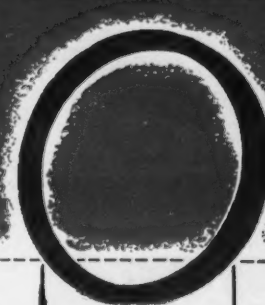
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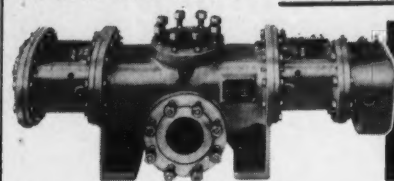
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PROCESSES, EQUIPMENT and MATERIALS

Use this "quick-locator" when you want information on a specific type of process, equipment or material mentioned in the processing stories or the advertisements in this magazine. Everything discussed in this issue is given here, if you want more data you can write manufacturer direct . . . or turn to pgs. 2-3 and use the handy "Information Request Slip." This is a special service provided by the publisher . . . no obligation or charge, of course. The publisher contacts the proper manufacturers for you—information comes to you direct.



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Harshaw Chemical Company	Schenectady Varnish Company
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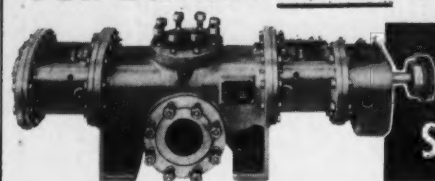
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PROCESSES, EQUIPMENT and MATERIALS

Use this "quick-locator" when you want information on a specific type of process, equipment or material mentioned in the processing stories or the advertisements in this magazine. Everything discussed in this issue is given here, if you want more data you can write manufacturer direct . . . or turn to pgs. 2-3 and use the handy "Information Request Slip." This is a special service provided by the publisher . . . no obligation or charge, of course. The publisher contacts the proper manufacturers for you—information comes to you direct.



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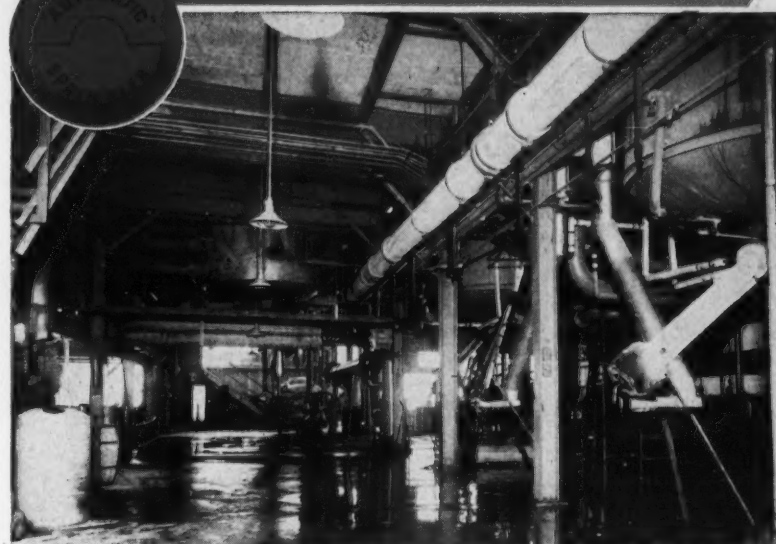
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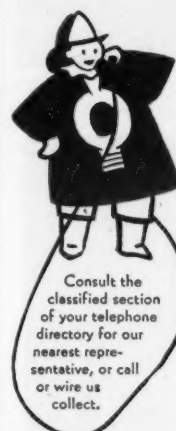
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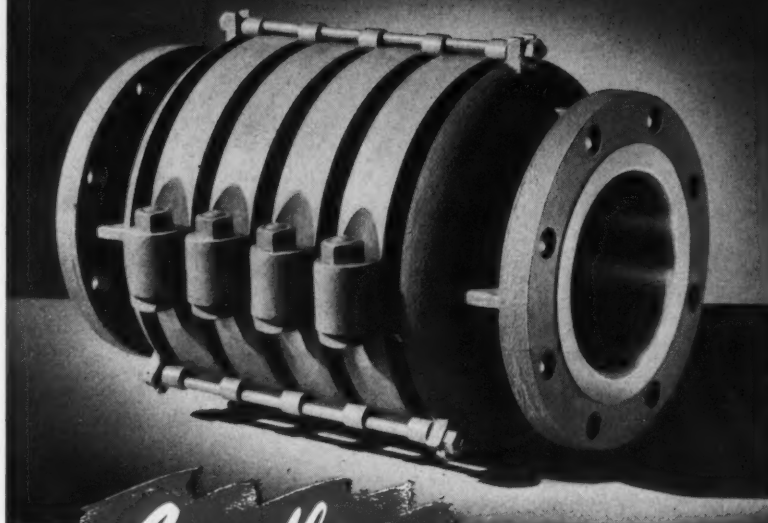
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Corruflex joints have traverses ranging from fractions of an inch to 15" and operate under pressures from vacuum to 300 psi and temperatures from sub-zero to 1600 F.

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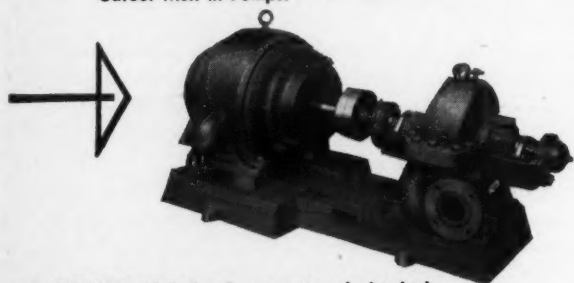
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Built by Centrifugal Specialists
The WEINMAN Pump Mfg. Co.
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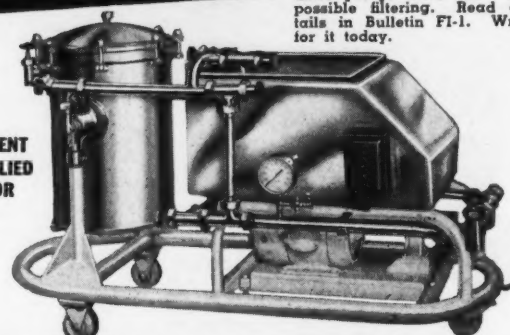
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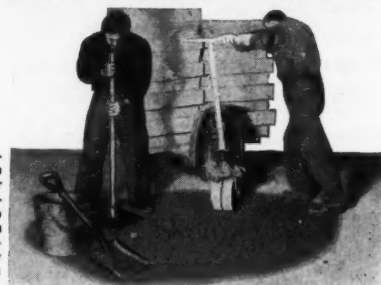
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CHEMICAL PROCESSING

"That's Interesting"

Horsehide leather for baseballs tanned with unusual care

Only in fine horsehide leather does the baseball manufacturer find such properties as strength, durability, scuff resistance and freedom from stretch.

Baseball leather is alum tanned. This produces the tight stretch-resistant leather that is required for close-fitting covers. Except for the tanning step, the process does not differ greatly from that used in ordinary leather, but unusual care is exercised in carrying out all the various steps. These include liming, unhairing, bating, hand-scudding, tanning with aluminum sulfate and syntans, and fatliquoring. Bating is done with Oropo, the Rohm & Haas prepared enzyme bate. Oropo selectively removes undesirable protein materials from the limed skin. Bated horsehides have a smooth, silky grain which is open and ready for even tanning.

H. Swoboda & Sons, Inc., Philadelphia, tanners, have been serving A. G. Spaulding & Bros., Inc., for over 40 years. Spaulding has supplied balls to both major leagues since each was organized. American League balls are made under the name of Reach which Spaulding controls.

The dumbbell-shaped pieces of horsehide leather are produced by die-cutting and they are pierced with a series of holes all around the periphery at the time that they are cut out. These tiny holes are so perfect that they line up when the two pieces of leather are paired. (The Rohm & Haas Reporter — Rohm & Haas Company, Philadelphia, Pa.)

Arsenic and — lead alloy sheaths of electric cables

Arsenic, when added to lead-alloy sheaths of underground electric power cables, gives longer life and greater strength to the alloy, according to a report issued by Prof. Curtis W. Dollins of the University of Illinois. Amount of arsenic used is reported to be one-tenth of one per cent. Arsenic-containing alloy not only adds strength to the electric cable but also permits heavier electrical leads, because higher pressures can be used for the insulating oil within the cable. (Aminco Lab News, Silver Spring, Md.)

Napalm bombs improved by silica aerogel

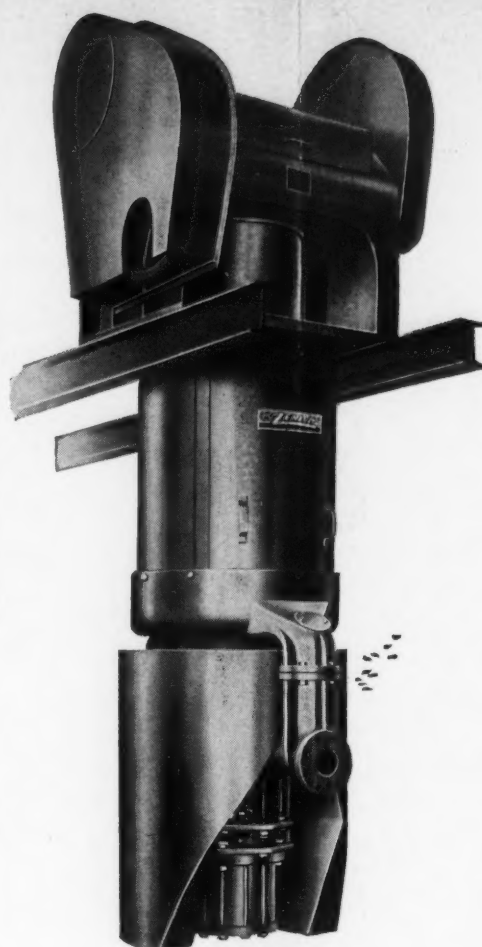
Absorption properties of silica aerogel have eliminated a problem of World War II encountered in the preparation of napalm. It virtually wipes out the "caking up" that occurred previously. The napalm bomb is composed of gasoline and a thickener — a granulated complex aluminum soap. The thickener used in the last war had two disadvantages. It dispersed slowly in cold gasoline and tended to "cake up" upon storage, particularly under tropic conditions.

By introducing silica aerogel, the Chemical Corps found that grinding operations were easier, and that the thickener did not "cake up". Resulting mixture was a finely-ground free-flowing powder, quickly dispersible in gasoline. Santocel, the aerogel used in this application, is a product of the Merrimac Division of Monsanto Chemical Co.

Smallest resistance thermometer

The RdF "Stikon" is said to be the world's smallest commercially available resistance thermometer. It measures surface temperatures ranging from -100° F to 400° F. Accuracy is within 1° F. In applications, it is cemented to a surface, as for example a motor block. Uses to date include aircraft and automotive and also industrial measurement and control. Leads, resembling beetle antenna, connect to a resistance measuring bridge. Fast, accurate measurements are given under dry or wet conditions.

Active part is minute grid of nickel wire, uniformly drawn to .0008 inch diameter and weighing one 64 millionth of an ounce. Ohmmeter readings are easily converted to degrees F or C by reference to charts supplied with each instrument. Thermometers are made by Ruge-de Forest, Inc., consulting engineers, Cambridge, Mass. (As reported in Nickelsworth — Vol. XVII — No. 3, International Nickel Co., Inc., 67 Wall St., New York, N. Y.)



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**patents applied for

J-C ZENITH* CONTINUOUS PULP PRESS WITH THE FAMOUS FLOATING CONE**

Now 100% automatic! The Floating Cone holds a constant, automatically controlled pressure against the pressed pulp as it is discharged.

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Paper Pulp: undiluted black liquor recovery — de-inking — ultra high density bleaching

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Rayon and Cellophane: for the continuous production of alkali-cellulose in rayon, cellophane, C.M.C., etc. by the slurry system

ADVANTAGES:

smaller floor space requirements • high recovery rate in separating liquids from solids or solids from pulp • continuous process instead of batch • greatly reduces evaporation costs • high yield of marketable by-products • single or multistage continuous counter-current extraction • aids in solution of stream pollution problems

J-C SHREDDER APPLICATIONS:

For Shredding, Defibering, Granulating, Mixing and Blending

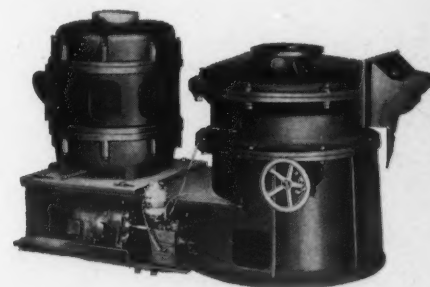
Operates over a broad range of consistencies, but the specific power is exceptionally low at densities of 25% or higher • Self-cleaning . . . never plugs at any density • Has an inherently high capacity • Requires a minimum of floor space • Low in first cost and maintenance • Available in two sizes . . . with capacity of 25/50 tons/day or 75/150 tons/day



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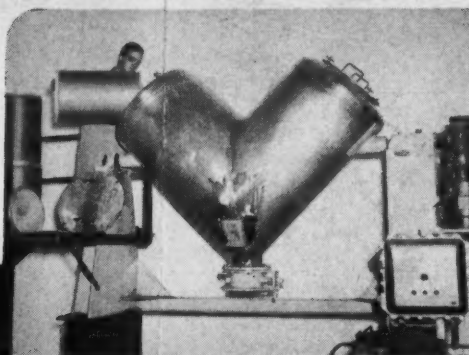
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CHEMICAL PROCESSING

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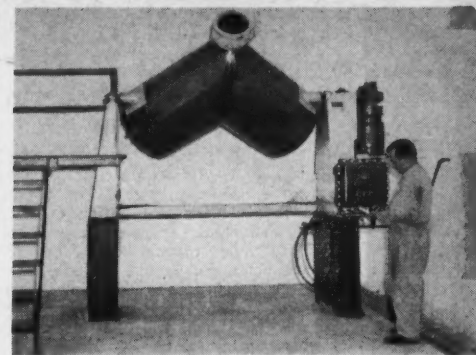
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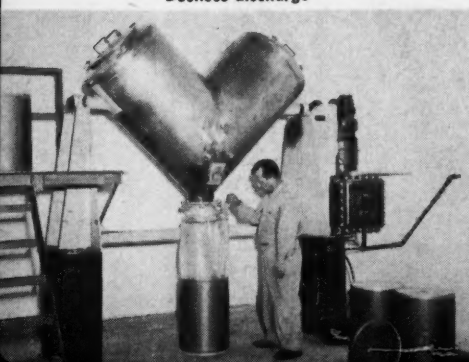
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Easy cleaning



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